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NOTE ON PELLAGRA IN MARYLAND.*

By William Sydney Thayer, M. D.,

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The recent recognition of pellagra in the United States, nay, the discovery that the disease is widespread in many parts of the South, would appear to justify a note on two characteristic cases of this disease which have apparently arisen in Maryland, the first that have been described here. Inasmuch as there are not many in the audience who have met with pellagra, a few words as to the history, distribution and nature of the malady may be pardoned.

The disease was apparently first recognized in the Asturias in Spain by Gaspar Cazal. Thierry,[1] physician to the Duc de Duras, ambassador of France at Madrid, in a letter to the dean of the faculty of medicine at Paris in 1755, describes the malady as it appeared then in the Asturias, where it was known as *mal de la rosa* and acknowledges that much of the information has been given to him by Cazal.

Frapolli[2] in 1771 refers to this affection in Lombardy where it was commonly known as *pellagra* (*pell'agra* =rough skin). Pellagra was soon recognized in many parts of Northern Italy, while in France it was described in "Les Landes" by Hameau.[3] Although prevalent during the first half of this century in various parts of France, it has now in great part disappeared. The disease exists in many other regions—in Northern Portugal, the Austrian Tyrol, Dalmatia, Croatia, Bosnia, Turkey, Greece, Bessarabia, Kherson and Poland. It is said to have been recognized in Africa by Pruner in 1847. Sandwith[4] in 1898 described the disease in Egypt. In the Western Hemisphere it exists in Mexico, Brazil, Argentine Republic, and is said to occur in the Barbadoes and New Caledonia. Finally, within the last two years the occurrence of the disease in the United States has been recognized. The first mention of this malady in America is by Harris of Atlanta,[5] who, in 1902, reported a case of uncinariasis which presented symptoms simulating pellagra, a case which was unquestionably a complication of the two diseases.

* Observations made at a meeting of the Johns Hopkins Hospital Medical Society, May 17, 1909.

[1] Description d' une maladie appellée *mal de la rosa*. Recueil périodique d' observations de médecine, de chirurgie, et de pharmacie, 2e édition, June, 1755, II, Paris, 1783.

[2] Animadversiones in morbum vulgo pellagram. 8°, Mediolani, 1771.

[3] Cited by Gaucher. Maladies de la Peau. Brouardel et Gilbert. Nouveau Traité de Médecine et de Thérapeutique. Fasc. XIV, 8°, Paris, 1909. Baillière, p. 41.

[4] Pellagra in Egypt. J. Trop. M., Lond., 1898-9, I, 63-70, 1 Pl.

[5] Anchylostomiasis in an individual presenting all of the typical symptoms of pellagra. Am. Medicine, 1902, IV, 3, 99.

In 1907 Searcy[6] reported an epidemic of acute pellagra in the insane asylum at Mt. Vernon, Alabama. In the same year Merrill,[7] of Colorado, Texas, reported a case, and later J. W. Babcock[8] published an important note on the existence of the disease in the South Carolina State Asylum for the Insane. Since this time confirmatory reports as to the existence of the disease have been published by J. McCampbell,[9] N. M. Moore,[10] King,[11] S. Leach[12] and Randolph.[13]

In October, 1908, a conference on pellagra was held under the auspices of the State Board of Health of South Carolina in Columbia, at which papers were read by N. M. Moore, E. J. Moore, J. J. Watson,[14] J. L. Thompson, J. H. Taylor, John McCampbell, I. M. Taylor, H. E. McConnell, D. B. Frontis, G. A. Neuffer, R. A. Lancaster, M. Ray Powers, H. H. Griffin, E. M. Whaley and J. W. Babcock. These papers, most of which were published in the Journal of the South Carolina Medical Association, Vol. IV, November, 1908, have been collected in pamphlet form.[15] Through the kindness of Drs. Babcock, Watson, Williams and others I have recently had the privilege of observing a remarkable group of cases of this disease in the State Hospital at Columbia as well as several instances from the surrounding country.

The *symptoms* of this remarkable malady are so distinct that although there are probably many larvate cases, a characteristic example of this disease can scarcely be confounded with any other affection.

Pellagra is characterized by symptoms of three main classes:

(1) Those related to the alimentary tract.

(2) The cutaneous manifestations.

(3) The nervous and mental symptoms.

Among the symptoms related to the *gastro-intestinal tract* are *nausea*, indefinite symptoms of *dyspepsia*, often *vomiting*, but especially *diarrhœa* which is more marked in the morning hours and often obstinate.

One of the most characteristic symptoms is the *stomatitis* which may be extremely severe. The mucous membrane of the mouth is of a fiery red color. Eating and swallowing are extremely painful. Aphthous ulcers develop and often extend over large areas, patches of white macerated epithelium exfoliating and leaving a raw, velvety, fiery red surface beneath. Salivation may be distressing.

The *cutaneous* symptoms are highly characteristic. These begin with an erythema on the backs of the hands and, in those who go bare-foot, on the dorsa of the feet. The palms and soles are rarely affected. At the outset the manifestations consist simply of a slight blush which rapidly assumes a brilliant red color like sunburn. The outlines of the patches are, however, as I have seen in several instances, rather sharply defined, more so than is usually the case with sunburn. This manifestation is always symmetrical. There may be a slight swelling of the affected areas. The blush, at first brilliant red, becomes soon of a deeper, more cyanotic color and may extend downward to the proximal interphalangeal joint, and upward to a point just above the wrist where it ends abruptly. The surface of the skin in these affected areas soon becomes dry, harsh and scaly, finally exfoliating in flakes or scales of considerable size or sometimes, especially about the edges, in finer bran-like particles. This dry exfoliating skin often becomes of a deep brownish color; cracks and fissures form. In severer cases, over the greater part of the backs of the hands there develop shallow bullæ, containing serum or pus or sometimes blood. Large masses of epithelium exfoliate, leaving a raw, red surface. After exfoliation the denuded skin has a thin, atrophied appearance. It has often a glistening, shiny aspect with slight superficial wrinkles and cracks and a deep red color, looking somewhat like the first skin which is formed after a burn. In some cases the brownish discoloration of the exfoliating skin is considerable. Often the cracks and fissures are deep and hæmorrhagic. In marked cases the skin over the dorsa of the last two phalanges becomes dry and of a deep brownish-red color, while the formation of bullæ and exfoliation may extend even to these regions. Similar changes occur on the dorsa of the feet in those who go bare-foot, and in marked cases like manifestations may also be seen over the malar prominences, extending across the bridge of the nose so as to give rise to a butterfly or mask-like appearance. Occasionally, similar cutaneous changes may be seen about the neck as a collar.

There can be no doubt that the rays of the sun have an influence in the production of pellagrous erythema, but while the protection of certain parts may control the appearance of these manifestations or change the shape of the patches of efflorescence, yet it can in no way be mistaken for an ordinary sunburn. These changes appear at a time of the year when the rays of the sun are not particularly intense, and, again, Neusser[16] has pointed out that in Roumania, the Gypsy chil-

[6] Epidemic of acute pellagra. J. Am. M. Ass., Chicago, 1907, XLIX, 37.

[7] A sporadic case diagnosed as pellagra. J. Am. M. Ass., Chicago, 1907, XLIX, 940.

[8] Babcock, J. W., et al. What are Pellagra and Pellagrous Insanity? Does such a Disease exist in South Carolina, and what are Its Causes? An Inquiry and Preliminary Report. Report to South Carolina Board of Health, 8°, Columbia, S. C., Dec. 30, 1907.

[9] Some observations on pellagra in this country with special reference to pellagrous insanity. Charlotte (N. C.), M. J., 1908, LVIII, 83-86.

[10] Pellagra: report of case, with remarks on etiology. J. Am. M. Ass., Chicago, 1908, LI, 1076.

[11] Pellagra with report of cases. South. M. J., Nashville, 1908, I, 289-293.

[12] A case of pellagra. Tr. M. Ass., Alabama, Montgomery, 446-452.

[13] Notes on pellagra and pellagrins: with report of cases. Arch. Int. M., Chicago, 1908-9, II, 553-568, 1 Pl.

[14] I have recently, through the kindness of Dr. J. J. Watson, had the privilege of reading the manuscript of a communication read by him before the Chester Co. Medical Society last fall, in which he discusses the disease on the basis of the study of one hundred cases in Italy and South Carolina.

[15] Conference on Pellagra, etc. 8°, Columbia, S. C., 1909. The State Co., Printers.

[16] Die Pellagra in Oesterreich und Roumania. 8°, Wien, 1887.

dren, who run about entirely naked, show a distribution of the lesions which is exactly the same.

Nervous and mental manifestations are almost always present. Vertigo is common. The graver nervous symptoms are mainly referable to the spinal cord and point to varied and combined lesions. In severe recurrent cases there may be a general increase in the deep reflexes, especially, however, in the lower extremities. Well marked spastic symptoms may occur and in some instances disturbances of sensation and paralysis of the sphincters. In other cases the reflexes of the lower extremities may be lost; those of the upper extremities increased. Anatomically, sclerotic changes are found, especially in the lateral columns of the dorsal cord, but lesions of the posterior columns are also not uncommon, and Sandwith [17] has described degeneration of posterior roots. An excellent account of the nervous manifestations of pellagra may be found in the "Referat" of Tuczek.[18]

The mental phenomena of the disease are exceedingly interesting and are well summarized by Neusser.[19] In the beginning of the disease there is, as a rule, confusion, weakness of judgment and will, feelings of anxiety, disorientation as to time and place, disturbances of the patient's disposition all the way from a slight depression to hypochondriacal fancies and suicidal tendencies. The patient is often silent; his expression is dull and serious; he looks, as Dr. Watson has expressed it, as if he had forgotten how to smile. There may be self-depreciation, delusions of persecution, self-accusation, refusal of nourishment. Often maniacal symptoms are observed in that the previously depressed and stuporous patients become suddenly emotional and restless. After such excitement the worn-out sufferers fall into an apathetic condition with, often, kataleptic phenomena. Hallucinations of sight and hearing are common. Mutism is apparently frequent. In the final stages the defects of intellect progressively increase, the memory is lost and the patients become profoundly demented. In chronic and recurrent cases dementia is a common result. In Italy it is estimated that one-tenth of the cases become permanently insane.

The disease is met with in two main forms; (1) as an *acute typhoidal condition;* (2) as a *milder chronic,* and commonly *recurrent malady.*

In the first form the disease is acute and fatal, running its course in a few weeks with active delirium, fever and uncontrollable diarrhœa.

In the second form the disease may run a chronic course with relapses lasting, in some cases, as long as 25 years. The severer cases run, however, a much shorter course. With each relapse emaciation, anæmia and debility increase, and with the progression of severe nervous and mental symptoms the patient becomes profoundly cachectic, demented and bed-ridden, partly, as Neusser has said, because of weakness, partly because of changes in the cord. For an excellent discussion of the disease I would refer to the articles of Neusser (Op. cit.), Tuczek (Op. cit.) and Sturli,[20] in the "Proceedings of the German Society of Naturalists and Physicians for 1905" as well as to the "Précis" of Dr. Lavinder.[21] A good account of the disease may also be found in Gaucher's fasciculus on diseases of the skin (Brouardel et Gilbert's "Nouveau Traité de Médecine et de Thérapeutique. Fasc. XIV. Maladies de la Peau." Paris, 1909. Baillière).

One of the most remarkable features of pellagra is its peculiar *seasonal relations.* The onset is generally in the spring months. In Italy this occurs in the early spring; during the summer the condition tends to improve with an occasional relapse or exacerbation in October, after which the symptoms ameliorate to disappear entirely by the new year. The patient may then seem apparently well, but in the succeeding spring another recurrence follows. This probably continues indefinitely, unless the conditions of living are changed for the better.

In Italy, where the disease has been best studied, the number of cases is really considerable. Pellagra exists, however, only among the poorer classes. In Lombardy where the disease is still very prevalent the number of cases in 1907 was estimated to be as large as from 3200-3500 out of a population of 543,961, *i. e.*, one case in every 160-170 of the population, while the mortality from pellagra in 1907 for this province was 18.2 per 100,000 inhabitants. In Padova the death rate from pellagra in 1907 was 36.6 per 100,000 inhabitants which indicates an enormous number of cases in comparison to the population, especially when one considers that the mortality from the disease is only about 2.5 per cent. But the general conditions in Italy are improving greatly under vigorous and well planned preventive and curative measures which have been directed toward (1) the exclusion of spoiled corn; (2) the education of the peasant in improved methods of agriculture; (3) the introduction of artificial dessicating plants for corn; (4) the erection of public store houses; (5) the establishment of rural bakeries which furnish well-made wheaten bread to the peasants; (6) the establishment of corn exchanges where mouldy corn may be exchanged for good; (7) the founding of local hospitals and sanitaria; dispensaries and economic kitchens for the distribution of proper food.

There are in Italy 22 special hospitals (*Pellagrossari*) for the care of patients suffering from the disease.[22]

[17] Three fatal cases of pellagra with examination of the spinal cord. J. Path. & Bacteriol., Edinb. & Lond., 1900-1901, VII, 460-464.

[18] Ueber die nervösen Erscheinungen der Pellagra. Verhandl. d. Gesellschaft deutsch. Naturf. u. Aerzte, 1905, Leipz., 1906, I Theil, 283-300.

[19] Das Krankheitsbild der Pellagra. Verhandl. d. Gesellsch. deutsch. Naturf. u. Aerzte, 1905, Leipz., 1906, I Theil, 251-269.

[20] Ueber die Aetiologie der Pellagra. Verhandl. d. Gesellsch. deutsch. Naturf. u. Aerzte, 1905, Leipz., 1906, I Theil, 269-283.

[21] Pellagra. A Précis. U. S. Treasury Dept. Public Health and Marine Hospital Service. 8°, Washington, 1908. Government Printing Office.

[22] I have recently had the privilege, through the kindness of Dr. Babcock, of reading a remarkable and most valuable account of Pellagra in Italy—a report to the Dept. of State by W. Bayard Cutting, Jr., U. S. Vice and Deputy Consul. It is greatly to be hoped that this document may be published for the benefit of the public. I am indebted to Mr. Cutting's report for the figures above quoted.

Many *hypotheses* have been advanced as to the *nature* of this remarkable malady. I can here only refer you to the abundant literature upon the subject. Especially valuable are the various articles of Lombroso to which full references may be found in the Index Catalogue of the Surgeon General's Library, while the recent article of Sambon [23] contains many interesting considerations.

Marzari [24] in 1810 first called attention to the fact that the disease prevails especially among those whose main articles of diet are the products of *Zea maïs*—Indian corn. Since this observation it has been shown clearly enough that there is a striking relation between the consumption of corn and the prevalence of pellagra. In those regions in Italy in which the disease is especially frequent the peasants live largely on a sort of corn mush called *polenta* and on soggy, heavy corn bread. The corn of which the meal is made is often harvested too early and stored under such conditions that it becomes commonly spoiled or mouldy. There is good reason to believe that the prevalence of the malady is in some way connected with the consumption of spoiled or mouldy corn. *In Italy the disease is strictly limited to the poor; it is unknown among the well-to-do* who exclude corn from their diet. While notable instances and small groups of cases have been reported in individuals where the consumption of corn has not been proven, yet that there is a relation between the consumption or at least the culture (Sambon) of corn and this disease is accepted by the great majority of observers. Nevertheless, two active schools still exist, the *Zeïsts*, who believe that the disease is due directly to the consumption of maize, and the *anti-Zeïsts*, who deny this relation. Sambon (Op. cit.) who is inclined to doubt the relation of normal or diseased corn as an article of diet to this disease, suggests that, as it is the field laborer who is especially subject to pellagra, and as his neighbor in the city who lives under the same conditions is usually free from the disease, it may be that it is *in the maize field* that the peasant comes in touch with the specific agent of pellagra. The common belief is, however, that the disease is acquired by eating corn which, having been harvested too early and stored under conditions which favor the development of parasitic growths, has become contaminated with some organism or organisms which, either through their own toxic products or through poisons produced by the decomposition of the maize, or both, gives rise in the consumer to the symptoms of pellagra. The results of the campaign against pellagra in Italy, already referred to, tend strongly to support the general contention of the *Zeïsts*.

Of the theories which have been advanced as to the nature of these poisons it will be impossible here to speak. Suffice it to say, that some, as for instance, Neusser,[25] have suggested that poisons might arise from changes in healthy maize in the process of digestion; others, for example, Lombroso,[26] believe that the poisons are chemical substances arising from the decomposition of the corn before its ingestion; others, to the products of changes produced by various special micro-organisms, and bacteria (Majocchi and Cuboni)[27]; or by moulds (Ballardini,[28] Gosio and Ferrati,[29] Ceni,[30] Fossati [31]).

Various observers believe that they have produced pellagra in human beings and in animals by the introduction of different products and extracts of diseased corn or of organisms which have developed upon it, but most of these experiments would appear to be inconclusive.

Before passing on to the report of my two cases let me present several photographs. The first (Photograph 1) is of a case of Italian pellagra in Lombroso's clinic, which was taken for Dr. J. J. Watson, of Columbia, who has most kindly allowed me to reproduce it. The general expression and the changes in the hands and face are rather striking. The second and third (Photographs 2 and 3) are of a remarkable case which Dr. Watson was good enough to show me several days ago. The man, an inmate of the almshouse, was a most striking example of the disease, showing a marked stomatitis with salivation, a persistent diarrhœa, cutaneous changes on the hands and face of a high degree, as are beautifully shown in these pictures. The patient was exceedingly weak; the gait, spastic. There was a great increase in the deep reflexes in both upper and lower extremities; there was a double ankle clonus and dorsal flexion of the great toe on plantar stimulation. The patient was dull; the expression, serious and fixed; he answered questions slowly and in a peculiar monotone; but with these exceptions, there had been no definite mental symptoms.

If now you will compare the brief description of the disease and these photographs with the account of the two cases which follow and the photographs of the second patient, whom I had hoped to present to you this evening, the identity of the conditions will, I think, be clearly evident.

(1) On November 27, 1905, in skimming over a number of medical journals I happened to come across an article on pellagra which I read with considerable interest. On the following day, with this article fresh in my mind, I was called to see Mrs. X., living about fifty miles from Baltimore. The patient was a lady 57 years of age, well-to-do and living in the best general circumstances. The history, exactly as I wrote it at the time, is as follows:

Mrs. X. Aged 57. November 18, 1905.

Family History.—Parents dead. On the mother's side there is an extremely bad history from the mental standpoint—all but one

[23] Brit. M. J., 1905, II, 1272-1275.

[24] Saggio medico-politico sulla Pellagra 1810, Venezia, presso Parolari. Reference taken from Osservazioni del Dr. Cerri, etc., intorno al saggio medico-politico sulla pellagra del Signor G. B. Marzari. Milano, 1811.

[25] Die Pellagra in Oesterreich und Roumänien. 8°, Wien, 1877; Untersuchungen über die Pellagra. Wien. med. Wchnsch., 1887, XXXVII, 132-135.

[26] Sull'eziologia e sulla cura della pellagra. Lav. d. Cong. di med. int., 1892, V, Milano, 1898, 160-186; for the complete references to Lombroso's numerous works on the question see Index Catalogue of the Surgeon General's Library.

[27] Referred to by Sambon (Op. cit.).

[28] Referred to by Sambon (Op. cit.).

[29] Sull'azione fisiologica dei veleni del mais invasi da alcani ifomiceti; contributo all' eziologia della pellagra. Riv. d'Ig. e san. pubb., Roma, 1896, VII, 961-891.

[30] Referred to by Sambon (Op. cit.).

[31] Referred to by Sambon (Op. cit.).

1. A case of Italian pellagra in the clinic of Professor Lombroso at Turin. Observe the facial expression, the eruption on the hands and face. Photograph kindly lent me by Dr. J. J. Watson, of Columbia, S. C., for whom the photograph was taken.

2. A case of pellagra under the care of Dr. J. J. Watson, of Columbia, S. C. Note the facial expression and the eruption on the hands and face.

of her mother's brothers and sisters committed suicide following melancholia. In her own immediate family there have been no cases of this sort. She has had five children; easy labors, and has always herself been a healthy woman with the exception of a very severe case of scarlet fever when a child and typhoid fever in 1884. The daughter says that all her life she has been one who was rather susceptible to cold, living in a very hot house and fearing exposure. For six or eight years her daughter says that she has had a curious tendency to go to sleep, sometimes during conversation, often when she yas playing cards with her friends, and during the last two years her color has changed from a pink and white complexion to an extremely sallow, pale color. One year ago, she consulted a dentist, who refused to fill a tooth because he thought from the patient's appearance that she was "in the last stages of Bright's disease."

Present Illness.—A year ago last June, she began to suffer with diarrhœa in the morning; would be waked up early in the morning by a desire followed by very watery stool. Sometimes this was the only stool in the day, sometimes there would be several more. They were unassociated with pain. At about the same time she began to develop an aphthous stomatitis. Dr. Y. says that the appearances were characteristic, though the aphthous ulcers were rather numerous. At the same time the whole skin became rather dry, the backs of her hands especially, as her daughter expresses it, became "scaly just like the back of a fish." They did not burn and there was no other complaint excepting of soreness and cracking of the skin. After two or three weeks the condition of the skin of the hands and of the mouth cleared up and associated with this, the diarrhœa stopped and the patient was in tolerably good condition until October of the same year when a similar attack came on again. At that time the patient developed rather well marked mental symptoms, was depressed and at the same time rather hysterical. The diarrhœa was more serious; the hands were discolored, purplish brown, not exactly like an ordinary eczema; they were very dry and scaly. The mouth again became very sore and the whole attack lasted five or six weeks. By Christmas the patient was almost well and remained well up to the onset of the present attack.

The present attack began six weeks ago (about October 1), the patient first becoming rather indifferent and manifesting a lack of interest in conditions about her, after which the mouth began to be very sore and burning again, the hands became scaly, red and rough on their backs and finally cracks and fissures appeared as well as large rather loose blebs containing pus, which ruptured spontaneously or on slight rubbing. The diarrhœa, which was sharp at first, lasted about two weeks since when it has disappeared, the patient having now normal movements, one a day. With this attack, however, the mental condition of the patient has grown steadily worse. She has been dull and drowsy and, at times, confused, talking at random and rather incomprehensibly to herself, and of late showing curious jerky twitching movements from time to time.

Dr. Y. has examined the urine repeatedly and found it free from albumin, of a specific gravity averaging about 1015 or 1016. Micturition not especially frequent. The appetite up to the illness was good: since then it has been fair but she has been unable to eat as she would because of the great pain and burning on any attempt to take food.

Status Præsens.—The patient was seen at about quarter past nine in the morning; in bed lying on the right side. She was somewhat restless, moving her jaw frequently as if chewing and nervously moving her hands about under the bed clothes. The patient is of medium size, fairly well nourished, of a remarkably pale, sallow complexion with a mere suggestion of color in the cheeks. Lips and mucous membranes, rather pale, though not as pale as the color of the skin would suggest. The face has a remarkable expression; the forehead is wrinkled much of the time; the eyes, which are rather heavy, are often nearly closed in such a manner as to suggest that there is photophobia although at other times the patient looks directly out of the open window. There is slight lacrimation. There is no fulness above the clavicles. The face has a strangely cretinoid aspect. The skin is dry, ichthyotic in appearance especially over the trunk, rough to the feel; no sign of moisture anywhere. The hair is rather remarkably dry but not exactly lustreless. The patient talks to herself unintelligibly, at frequent intervals, and is confused and wandering, though now and then she answers sharp questions well. There are occasional sudden twitchings of the arms and trunk; the hands move about under the bed clothes much of the time. There was a curious tremor, somewhat like the movements one sees in Friedreich's ataxia. Pupils, equal. (I find unfortunately no note about the reflexes.)

Pulse, 22 to the quarter, of moderate size; rather soft; regular. Respiration, 24. Lungs, perfectly clear on auscultation and percussion. No apparent enlargement of the heart; no accentuation of the second aortic sound. The abdomen is greatly and uniformly distended and everywhere tympanitic. Neither liver nor spleen is palpable.

On the back of each hand the skin is dry, hard, cracked and scaly; in many places reddish-brown in appearance; in places discolored by old dry hæmorrhage. In other places there are areas where the skin is white and loose, evidently the remains of recent bullæ. This condition is uniform on both hands and extends down to the proximal inter-phalangeal joint. The deep redness of the skin, however, extends a little further down the phalanges. It does not extend above the wrist. The mouth shows a high degree of stomatitis. There is a foul pungent odor to the breath. The lips all along the inner surface, show a layer of macerated loose white epithelium, and a similar layer covers the greater part of the tongue and the cheeks. On the hard palate the condition is much less marked. The mucous membrane is of a deep red color though not nearly as fiery red, according to the doctor, as it has been. Along the left leg in particular there are masses of exfoliated epithelium. There is no œdema. The legs are well developed, though not unduly thickened or large.

In the region of the thyroid between the sternomastoids there is a hollow. There is no sign of thyroid either on inspection or palpation.

I was immediately struck by the extraordinary similarity between this case and the description and picture of pellagra. The condition, as I remarked to the physician in charge, was indeed apparently identical. There was but one atypical feature about the case, namely, the October relapse without a spring relapse in the same year. There were, however, several peculiar features in the history of the patient—namely, the striking change in the complexion, the drowsiness, the chilliness, the remarkable facies which had led the dentist to assume that she was "in an advanced stage of Bright's disease." These features taken in connection with the impalpability of the thyroid and the dryness of the skin suggested the possibility of hypothyroidism. It was accordingly determined to start treatment with thyroids, beginning with three 2-gr. (0.13 gm.) doses of dessicated thyroids a day. The change in the patient's condition was immediate and remarkable. I did not see her again, but the attending physician tells me that on the very day that the treatment was begun the patient passed for the first time a quiet night. For several weeks she continued with this dose and then for several months took from four to five grains (0.26-0.32 gm.) daily. The improvement

was rapid, the mental, cutaneous and gastro-intestinal symptoms entirely cleared up, and since then she has remained quite well. The doctor, however, assures me that the patient has found that whenever she has tried to stop the thyroids, of which she is now taking two grains (0.16 gm.) a day, a sense of heaviness and dulness has returned, so that he and she are convinced of the necessity of continuing the treatment.[2]

From the effects of the thyroid together with the symptoms above referred to it is not impossible that this is an instance of hypothyroidism; the mental symptoms might well be associated with this condition; but the cutaneous, the buccal, the gastro-intestinal manifestations were so striking that it was difficult to discard the suspicion of the existence of pellagra. This suspicion was strengthened upon the recognition of the disease in the South, and now, since I have become familiar with the disease, I have no hesitation in presenting the report of this case as a characteristic instance of pellagra.

The patient, it should be said, ate the products of maize no more frequently than does any ordinary individual in this region. May it perhaps be that the hypothyroidism rendered her unduly susceptible? Or may it be that in thyroids we have a valuable therapeutic agent. With regard to the latter question, Dr. Babcock tells me that he has used this substance in several cases without effect. The question as to the predisposing effect of hypothyroidism is interesting. It is not impossible that an affirmative answer may be justified.

Ever since my observation of this case I have been on the lookout for further instances of the disease. It remained, however, for my colleague Dr. Finney to direct my attention to the second case, the first which has appeared at the Johns Hopkins Hospital, a patient who came to the Surgical Department on Friday, May 14, 1909.

Case II.—M. J. S., Gen. No. 65,580, married, 35 years old, a driver. The patient comes to the Surgical Department of the Dispensary with the complaints that he "can't swallow"; that "it hurts to talk"; that his mouth and throat and hands are "sore."

Family History.—Father died of tuberculosis, at 38; mother, of "inflammation of the stomach," at 37; two sisters and one brother are well; two brothers and a sister died in infancy. Has been married sixteen years. Wife living and well; three children living and well; five died "of marasmus" under three years of age.

Past History.—The patient says he has always been delicate but never seriously ill. Chills and fever ten years ago. Appetite and digestion have always been good. Gonorrhœa at the age of 17, and, at the same time, a sore on the penis which was not followed by secondary symptoms. At one time he used to drink a great deal of beer; now, several glasses of gin a day. Smokes cigarettes constantly. Lives a rather irregular life, driving a whiskey wagon. The work is light; he takes care of horses and "drives a few orders a day." Two weeks ago he gave his horse several feedings of "chops" with which he mixed medicine to make the horse "slick." This he mixed with his hands and to this act he ascribes his present illness. He denies eating corn bread, corn flakes or hominy.

Present Illness.—Two weeks ago at about the beginning of May, about three days after feeding the horse with the medicated "chops," his hands became, as he expressed it, "chapped," and several days later he applied a salve which he obtained from the druggist. Two or three days after this the hands "broke out in blisters" which broke, leaving the present condition. Three days after his hands became affected the lips and tongue became sore and this soreness has spread back into his throat and is worse now. For six days it has been difficult to swallow. Since the onset of his illness he has vomited several times daily, often nothing but saliva, but he has been very nauseated and since his throat became sore it has been difficult for him to eat or drink. At the time when first seen the patient was rather thin but, in the main, a healthy looking man. There was a very marked stomatitis; the tongue, lips and palate were fiery red as also were the gums and the mucous membrane of the mouth, where, in many places, over small and large areas, greyish-white masses of macerated epithelium were exfoliating. The hands showed a remarkable condition. The dorsa of the hands were of a deep brownish-red color covered with masses of dry scaly exfoliating skin; in some places evidently the remains of old bullæ. The skin beneath was of a deep red color. This process extended to a point just above the wrists where it ended sharply, and to the proximal interphalangeal joint. Below this, over the phalanges, the skin showed a deep brownish-red pigmentation and in places a suggestion of the beginning of the formation of bullæ; it was harsh and dry. The differences, however, in the stage and the degree of the process on the fingers below the proximal interphalangeal joint and the changes on the back of the hand were striking. The knee kicks were fairly active but not exaggerated. The patient, on questioning, stated also that he had had several movements of the bowels each day which were rather loose; he did not regard the condition as diarrhœa. The picture appeared to me to be typical of pellagra and the patient at his own request, was admitted to the hospital.

On entrance the temperature was 99.8° F.; pulse, 111; respira-

[2] "In regard to the present condition of the skin. The whole cutaneous surface is quite normal, and the harshness and dryness entirely gone. The hands are particularly soft and pliant. There is no discoloration or efflorescence. Her hands are rather smaller than they were five or six years since. This change in the skin began immediately with the improvement of the other symptoms and within five or six weeks they had entirely disappeared, the dryness and the efflorescence, and skin normal.

There has never been any return of the stomatitis or diarrhœa.

I am not sure that Dr. Thayer was fully impressed with one symptom that long preceded the others, was continuous with late developments, diarrhœa, stomatitis, trophic skin changes and disappeared synchronously with these and has never returned,—and that is her very notable somnolence. This was observed by many of her friends and neighbors. If she was playing cards she would frequently have to be wakened up when it came time for her to play. She would go to sleep in a crowded room, doze at the table—fall asleep at any and all times.

In many respects her character is changed. She is more alert than I ever knew her and mentally active. Always having a sense of humor, she has developed some reputation for witticisms. She is very independent and rather aggressive.

No statement can exaggerate the marvelous disappearance of her symptoms. She was apparently moribund when Thayer first saw her and I had abandoned all hope of her survival of more than a few hours. At 4 p. m. of that day she took 2½ gr. of powdered thyroids. Her restlessness ceased at once—that is in two hours. She slept for ten hours and her intelligence fully returned in the morning.

She has never been without the thyroids for more than a week. She fears to go longer, as she thinks the nervous symptoms begin to reappear."—(Quotation from a letter to me about this patient from Dr. Y., dated June 1, 1909. Editor.)

3. The hands of the patient in Plate 2.

4. Case 2. Pellagra arising in Baltimore. Observe the facial expression and the eruption on the hands.

5. Hands of Case 2. The pigmented skin has in great part exfoliated. Observe the sharp outlines of the cutaneous changes and the deep fissures with hæmorrhage.

6. Larger photograph of hands in Case 2.

tions, 20. At night the temperature rose to 101.7° F.; falling the next morning to 99° F. and rising to 100.8° F. on the evening of the 15th, to fall again to 99.5° F. on the morning of the 16th. The blood pressure was 115. The *blood* showed nothing remarkable in the appearance of the fresh specimen. The count showed red corpuscles, 3,864,000; leucocytes, 6400; hæmoglobin, 84 per cent (obviously a wrong estimate).

Dr. Selling noted that the patient's face was sunburned and that his lips were reddened and bleeding in one or two spots. On removing some of the greyish macerated epithelium from the inner surface of the lips a raw red bleeding surface was left, and the whole area of the buccal mucous membrane was covered with similar patches varying in size from a pin head to a centimetre. The mucosa visible between these areas was very red and in places bleeding. The tongue showed similar areas with marked *pyorrhœa alveolarium*. The lid slit of the right eye was a little wider than the left. Pupils, equal; reacted to light and accommodation. Posterior cervical glands were moderately enlarged. Both epitrochlears were palpable, about the size of beans. Physical examination of the chest and abdomen showed nothing abnormal. There were no scars on the extremities, no nodes on the shins. Ophthalmoscopic examination was negative.

On May 15, Dr. Sladen dictated the following description of his hands and mouth: "The patient's two complaints are the condition of his hands and that of his mouth and throat. The hands are symmetrically affected and only on the dorsa where in a distribution as shown by the photographs, the skin is dry and desquamated, leaving as a remnant a smooth pink skin which is cracked in several places, particularly on the wrist and knuckles, and covered by hæmorrhagic crusts. They look like skin after scalding. No particular pain is associated with them. On the dorsa of the fingers where desquamation has not taken place, the skin is thick, dry and raised in blisters, one of which is hæmorrhagic.

Mouth.—The lower lip is chapped and over the surface of the gums and soft palate the mucous membrane is fiery red and mottled with irregular patches of greyish-white membrane. These are on the under surface of the tongue also. As well as can be seen the pharynx and pillars present the same condition. There was well marked arteriosclerosis, the radials and brachials tortuous and thickened. Knee kicks were active; abdominal reflexes, present; the cremasteric also; the deep reflexes of the upper extremities were active. Mentally he was perfectly clear, rational and well oriented."

The *urine* was yellow; slightly turbid; acid; specific gravity, 1020; a trace of albumin, the sediment showing many pus cells and one granular cast.

The patient had three *stools* the first day and two on the second. These were loose, of a brownish color separated into two layers, the upper fluid, the lower of semi-fluid, rather coarsely granular material. Nothing remarkable on microscopical examination.

Dr. Boggs on the morning of the 16th of May noted that there was "no induration about the margins of the lesions on the hand and very slight pigmentation about the upper edge. The horny layer of the skin is detached to the base of the nail of every finger and there is a slight hæmorrhagic exudation. This layer is not, however, separated beyond the second joint of the finger except on the thumb where it extends almost to the nail and on the right side not quite so far. The palmar surface of the hands is perfectly free. The tongue is very smooth as though the superficial layers of epithelium were loose, of a bright red color. . . . ."

I came into the patient's room just as Dr. Boggs was leaving and, after describing the conditions on entry, made the following note: " . . . .The patient is in bed. Fairly healthy but rather tired looking man; rather sparely nourished. Color of the lips and mucous membranes, good. Tongue and mucous membranes of the mouth are of an intense fiery red color. On the hard palate, buccal mucosa and gums there are everywhere masses of white macerated epithelium which in some places are hanging loose. The intense redness of the mucosa is very characteristic. There is a marked seborrhœa sicca of the scalp. The skin of the neck, face and trunk shows in other respects nothing remarkable, and the feet and legs are perfectly clean. The condition of the hands has changed considerably in the last two days. Much of the dry, brown superficial skin has exfoliated and to-day the dorsa of the hands show a deep red dry surface covered with thin glistening wrinkled scales and many deep, hæmorrhagic fissures. These are especially marked at the left wrist and over the thumb on the same side but there are also deep bleeding fissures on the right, especially on the back of the wrist and over the metacarpophalangeal joint of the third finger. The exfoliative changes stop in great part at the first (proximal) interphalangeal joint, but on the left little finger over the second phalanx there is some dry exfoliating skin, and a loose bulla, in part hæmorrhagic, on the third finger. On the index finger of the same hand the skin is raised by a slight, loose, wrinkled bulla. On the other fingers the skin is dry, hard, slightly reddish-brown in color. The palms of the hands are perfectly clean and the process on the dorsum is limited by a sharp line between the metacarpal bones of the little and third fingers, although outside this, the skin is dry and harsh and exfoliating in smaller bran-like scales. The deep redness is here not present. On the radial side of the hands the process stops a little beyond the middle of the thumb.

The thorax is symmetrical; costal angle, under 90. Movements, aparently equal. Respiration perfectly clear.

Heart.—Point of maximum impulse in the fifth space, just within the mamillary line. Sounds, clear. Aortic second a little louder than pulmonic second.

Abdomen, natural. Spleen, not palpable. Liver, just below costal margin in the mamillary line, indefinitely felt. No special glandular enlargements although an occasional small soft gland is felt in the neck on both sides. . . . . There is a slight reddening at the right elbow joint, probably from resting upon the elbow; the skin not harsh. There is no increase in the deep reflexes of the arms or legs; plantar stimulation is followed by plantar flexion of the great toe. Radial arteries rather thickened and distinctly palpable."

While making this examination it was noted that the patient was somewhat restless, and appeared apprehensive, often raising his head from the pillow during the examination. When, toward the end of the examination something was said about bandaging his hands, he suggested that that be done immediately as he was obliged to go home on the following morning. When asked why he had to go, he said he must look after his horse. He was asked if some one else could not attend to this for him, to which he answered that his son who was there, could do it if he were there to tell him what to do, but that he should be obliged to go home for a few hours on the following day, after which he promised to return. He then suggested again that his hands should be bandaged now and that he could take off the bandages when he reached home, a suggestion which seemed rather pointless. He had a distinctly apprehensive look and his whole conversation suggested slight mental confusion.

Immediately after I left he was dressed in order that his photograph might be taken. He soon became exceedingly impatient, insisting that he must leave the hospital *immediately* and becoming very much excited. While the photograph was being taken he was exceedingly nervous and irritable, refusing to remain quiet, and immediately thereafter he insisted on leaving without further delay. After reaching home the patient talked wildly. He tried to find some liquor and accused his wife of taking it. He said that he had been maltreated in the hospital and that one of his friends had committed suicide with a cap pistol. He

showed disorientation as to time, fancying that he had been at home once before during the morning. He was so obviously out of his mind that his brother tried to persuade him to go back to the hospital which he refused to do, but he was persuaded to go to St. Joseph's Hospital. I have learned since that he entered St. Joseph's Hospital in the evening. During the night he was delirious, got out of bed frequently, threatened other patients and was so noisy and obstreperous that he was put in a cell. He was very noisy and maniacal all night. On the following day when Dr. Hayward saw him he was very much confused. He did not know his name, nor did he realize where he was and seemed to think that he was at a place called "St. Michael's." The case was not regarded as a fitting one for a general hospital and he was taken home by his friends. On the afternoon of May 25, I visited him at his house. He was then lying on a couch, looking perhaps a little thinner than when I last saw him. He had the same dull, rather sad expression. He spoke little but answered questions clearly though he had rather a suspicious look. The stomatitis was somewhat better. The tongue was dry, very red but not quite as fiery as when last seen. The patches of exfoliating epithelium were less marked. The hands were bandaged so that I could only see the last two phalanges where the skin had become of a much deeper brown color like that of the backs of the hands before its exfoliation. On the right malar prominence in a small area the skin was dry and harsh and a little brownish.

In this instance the lesions of the hands and mouth, the diarrhœa, the mental symptoms form a picture too characteristic to admit of serious doubt as to the nature of the disease. Nothing could be more typical of pellagra than the whole complex of symptoms.

The existence of pellagra in Maryland is no more than one might expect in view of the considerable number of cases wihch have been reported through the South. One important question naturally arises with regard to the recent recognition of pellagra in this country. Has the disease existed for a considerable period of time, or has it appeared for the first time within the last few years? The testimony of the physicians and nurses in charge of the State Hospital for the Insane at Columbia, South Carolina, is perfectly definite upon this point. The disease has existed there for at least 18 years, and it is therefore probable that it must have existed unrecognized elsewhere. It would seem, however, very probable that the frequency of the malady has been increasing in the last few years. It is hardly likely that so many cases could have been passed by unnoticed. I feel quite sure that I myself have never seen a marked case of the disease before meeting with the first instance here reported.

It is needless to suggest here that the appearance of pellagra is of very grave significance. The prevailing idea is that the disease is due to the consumption of spoiled or mouldy corn. The disease is really wide-spread in this country. It is apparently increasing. The products of corn are a most important element in the diet of all classes of society in this country. Is there not then perhaps reason to fear a serious increase in the prevalence of this malady? One interesting point is already evident. In Italy where corn is eaten only by the lower classes the disease is absolutely limited to the poor. In this country I have heard within the last year of several acute fatal cases of the disease in individuals living under the best social and hygienic conditions as in my first case. It is most important that every one of us should be on the lookout for fresh cases of pellagra and further investigations into its prevalence and cause should immediately be undertaken.

A REPORT OF TWO CASES OF OSTEOPLASTIC CARCINOMA OF THE PROSTATE WITH A REVIEW OF THE LITERATURE.

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(From the Continuous Medical Service of the New Haven Hospital.)

The interest in the clinical aspect of bone metastases associated with various forms of new growth has been very keen in the past few years. We have learned that there are certain forms of neoplasm which tend to metastasize in the bones and which may give rise to osseous changes recognizable during life. This aspect of mammary carcinoma has long been known, especially the association of this disease with spontaneous fractures, and with the nervous lesions so graphically pictured by Osler in his article on the medical aspects of cancer of the breast. More recently it has been recognized that certain thyroid and adrenal tumors tend to give rise to bony metastases. In the case of the thyroid the metastases are usually destructive and seem inclined to attack the bones of the head and upper part of the body. In the case of the adrenal the types differ in children and adults, children suffering from the type described by Hutchison, and by Tileston and Wolbach in this country, in which the cranial bones, especially the orbit, are the common site of the secondary growths, and adults being more apt to develop single metastases in the long bones, or if in the skull, not involving the orbit. Bony metastases secondary to prostatic carcinoma are very common, but are not recognized in a majority of cases because they are often unassociated with deformity or visible changes in the shape of the bones. The frequency of this form of bony metastasis and the fact that since Cone, in 1898, no one in this country seems to have paid any attention to this form of growth, leads me to report two cases, one examined post mortem in Albany, in 1901, and one recently seen clinically in New Haven.

Case I.—C. S., aged 60, married, an American, a clerk, applied for treatment at the New Haven Dispensary, February 5, 1908, complaining of cough and pain in the left side of the chest and in the back. He entered my service at the New Haven Hospital April 27, 1908. The following notes are abstracted from the Dispensary and Hospital histories and from the autopsy protocol.

Family History.—His father died of aneurysm at 55. His mother died of kidney disease and uterine trouble at 81. One brother died at 51 of cirrhosis of the liver. One sister died at 50 of cancer of the breast. One sister alive and healthy. He has a son and a daughter alive and well, and lost one daughter in infancy of cholera infantum. He knows of no hereditary disease in his family.

Past History.—He had measles, chicken-pox, and mumps as a child, and a mild attack of influenza five years ago. He had a slight attack of inflammatory rheumatism at 23. He denies venereal disease, and gives no history of secondary lues. He has been a moderate drinker all his life, and an excessive smoker. For the past year he has had to urinate two or three times at night. He has some dribbling of urine after urination. He has pain in the region of the prostate when the bowels move.

Present Illness.—He first noticed toward the end of January, 1908, a short cough followed by pain across the front of the chest, slightly increased by deep breathing but severest when coughing and at night. The pain is situated under the middle of the sternum and radiates laterally. There is pain in the back immediately behind that under the sternum. It is continuously dull and gnawing, with frequent attacks of sharp, lancinating, shooting pain. The pain is getting more severe, and is least noticeable when he is in the sitting position. He has slight dyspnœa, and is getting weak. When first seen, his weight was 143½ lbs., his normal weight being 161 lbs.

When first seen at the dispensary it was noted that he was pale, had thickened arteries, that there was some prominence of the lower ribs on the right side, and that the urine contained pus, but no albumin. I saw him February 7, 1908, and noted that he had on the outer side of the ramus of the left interior maxilla a hard enlargement. It was also noted that the sternum was sensitive on percussion and also the lower end of the left femur. The prostate was noted to be enlarged, especially the left lobe which was hard and a little tender. At this time I made a diagnosis of carcinoma of the prostate with metastasis of the bones.

On his entrance to the hospital, two months later, a complete physical examination showed that he was cachectic looking. His arteries were tortuous and diffusely thickened. The tumor of the lower jaw was of bony hardness. There was enlargement of the glands of the neck on the left side, and of the subclavicular gland on the right side. The outer end of the right clavicle was considerably enlarged, measuring 4.5 cm. from above downward as contrasted with 2.5 cm. on the other side. The third, fourth, and fifth ribs on the right side were slightly thickened and more prominent than those on the left side. The lungs showed the signs of senile emphysema. The heart was not enlarged, but there were systolic murmurs at the apex and over the aortic surface with a ringing second aortic sound. The abdominal organs were negative. The inguinal glands were slightly enlarged. The testicles were normal, and there were no scars on the penis. The prostate was unchanged since the previous examination. There was sensitiveness over the spines of the sixth and seventh dorsal vertebrae. The knee kicks were lively, but nothing else abnormal on the part of the nervous system was dicovered. The superior surface of the pubic bone was irregular and thickened.

After entrance the patient's condition grew gradually worse. He lost weight and strength steadily. The pain in the back took on the character of a girdle pain and became intense, requiring frequent hypodermics of morphine to control it. The bone swellings, with the exception of the clavicular one, showed but little change. Stiffness of the neck and back appeared. The patient began to complain of numbness in the left leg, and there was slight dulling of the sense of pain on that side with an exaggerated knee kick. The urinary symptoms remained unchanged. There was never any obstruction or incontinence. Twelve days before death the clavicular swelling was noted to be softer than formerly, and the day before death it fractured spontaneously. Twelve days before death the right side of the chest became markedly bulged and the left side flattened. The sensation to touch and pain over both legs was impaired, the tendon reflexes were exaggerated, and there was a doubtful Babinski on both sides. Two or three days before death there was slight bleeding from the urethra and hematuria. The patient finally died January 26, 1909, about two years from the beginning of the urinary symptoms and one year from the beginning of symptoms suggesting bone involvement. He died from increasing marasmus, with signs of a terminal pneumonia at the left base.

The urine examined on several occasions showed only traces of albumin and a considerable amount of pus. Near the last there was some pus and a few granular casts. Bence-Jones albumose was never present.

An examination of a test meal was negative.

The blood showed a secondary anæmia. There were several differential counts made, but they showed nothing markedly abnormal. The eosinophiles were never above 4.5 per cent. There were no eosinophilic myelocytes. The basophiles reached 1.5 per cent on one occasion. The leucocytes were slightly increased (11,200). There were no marked changes in the red corpuscles.

The autopsy by Drs. Bartlett and Arnold showed the prostate not much enlarged, measuring 4 cm. transversely. The left lobe was yellowish-white in color, firmer than normal, and infiltrated with new growth. A similar growth infiltrated some of the mesenteric, retroperitoneal, abdominal, bronchial, tracheal and cervical lymph nodes. The internal organs were free from metastases. There was very extensive infiltration of all the ribs with neoplasm, with fracture of the third, fourth, fifth, and sixth ribs on the right side. The right clavicle was also infiltrated and fractured. The sternum seemed free. The dorsal vertebræ were infiltrated. The skull was the seat of several metastases. The other long bones were not examined. The immediate cause of death was terminal pleurisy and broncho-pneumonia.

Histological examination showed in the prostate and in all the metastases a tumor of the carcinoma type, in places carcinoma simplex, in other places definitely of the adenomatous type. In the bones the growth was associated with both bone destruction and bone new formation, and corresponded to the picture so well described by Von Recklinghausen as osteoplastic carcinoma. In the ribs and clavicle the destructive process preponderated, and this had led to the fractures described.

CASE II.—J. G., aged 70. Died in the service of Dr. Van Rensselaer in the Albany Hospital. Clinical history not obtainable.

The autopsy was done fifteen hours after death. The main findings were as follows: The man was much emaciated. There was a double sero-fibrinous pleurisy. The heart showed brown atrophy. The left lung showed pleural tubercles, consolidation with caseation, and congested bronchial mucosa. The right lung showed one caseous area. The bronchial glands were enlarged and showed diffuse caseous areas. The liver showed numerous nodules of new growth, grayish-white in color, from 1 to 2 mm. in diameter. Both adrenals were infiltrated with grayish-white new growth. The spleen showed marked interstitial splenitis with tubercle nodules and areas of new growth. The kidneys showed multiple abscesses and the usual picture of ascending infection. The prostate was enlarged, but was not noted to be abnormal in appearance. The retroperitoneal glands were enlarged and infiltrated with new growth. Most of the ribs, the vertebræ, the iliac bones, and the skull showed areas of infiltration with new growth. The femora were free.

Microscopic examination showed that the prostate was the site of a scirrhus carcinoma in place of the carcinoma simplex type, in other places adenomatous. The bones above-mentioned were

infiltrated with a similar growth which was associated with destruction of bone in some areas and with new formation in others, the typical picture of Von Recklinghausen's osteoplastic carcinoma. The adrenals, retroperitoneal glands, and lungs also contained metastases, and there was a concurrence of tuberculosis and carcinoma in the lesions of the lungs, liver, spleen, adrenals, and the bronchial and retroperitoneal glands.

I have been able to collect from the literature 43 instances[1] of this form of carcinoma, 16 of which are reported by Kaufmann. This author's experience shows that if bone metastases are looked for in patients dead of carcinoma of the prostate they will be found in a large percentage of instances. In his own series of 22 cases, in which the bones were properly examined, 70 per cent showed bone metastases, which puts cancer of the prostate far ahead of any other form of new growth so far as this feature is concerned. Hypernephromata give bone metastases in 50 per cent of cases, thyroid tumors in 25 per cent, and breast carcinoma in only 14 per cent. Considering the frequency of prostate carcinoma it is easily realized that many instances of bone metastases must have been overlooked in the past. If bone metastases occur in such a large proportion of cases of carcinoma of the prostate, it is important to know whether the condition can be recognized clinically.

An analysis of the symptoms and signs in 23 patients regarding whom the clinical histories are fairly complete, shows that these cases may be divided into certain types. Symptoms calling attention to the urinary tract may be prominent, or at any rate present, as they were in 13 of the 23 cases, or they may be completely lacking. As far as can be judged there are no symptoms suggesting urinary trouble in approximately one-third of these cases; in one-fifth it is expressly stated that no urinary symptoms were present, in the others they may have occurred, but were probably so slight as to escape notice.

Of the general symptoms emaciation and weakness were most frequently mentioned. Pain of a general character in all the bones, or more local pain in the back and legs was also common. Anæmia was noted in some cases, though there are but few records of blood examinations and most of these show merely a secondary anæmia. The eosinophilia, which characterizes some bone tumors, was present only in Braun's patient, whose blood showed a few eosinophilic myelocytes.

Of the urinary signs, an enlarged prostate was noted only in about 50 per cent of the cases. Signs of cystitis occurred in one-fourth of the cases. In fact, the urinary signs may be summarized by stating that when present they were usually those of an enlarged prostate. It is to be noted, however, as a peculiarity of prostate carcinoma, important in these cases, that the gland is often but slightly enlarged, and may even be diminished in size. Clinically evident glandular metastases occurred in a little less than one-fifth of the patients.

As far as the bones are concerned three quite sharply defined groups of cases may be recognized, but more than one type may occur in the same patient:

1. Patients with isolated bone metastases.
2. Patients with spinal metastases causing compression of the cord with spastic paraplegia. (The occasional cranial metastases with hemiplegia might be placed with this group.)
3. Patients with diffuse bone metastases giving rise to no external deformity.

The patients with isolated metastases are especially interesting to the surgeon, inasmuch as the metastasis has in several instances been taken for a primary growth and has been removed, the true nature of the process later coming to light as the result of histological examination of the tumor or of an autopsy. Thus tumors of the frontal bone, the scapula, and the tibia have all been removed surgically as primary growths, and this in some instances in spite of the fact that the patient had definite symptoms of prostatic disease. In six of the reported cases there were isolated bone metastases; in two instances the pelvic bones were affected, in the other four the femur, the frontal bone, the scapula, and the tibia respectively. There were multiple bone metastases which were clinically apparent in about one-half of the cases. In such cases, of course, the mere multiplicity of the growths should lead one to suspect that they were not primary.

Those with more or less marked paraplegia numbered 8 out of the 23 cases. In 4 of these the paraplegia was complete and accompanied by the usual sensory changes, the lack of sphincter control, and the exaggerated reflexes. In the other 4 cases the paralysis was incomplete. In one instance there was a definite dorsal kyphus with the paraplegia, but as a rule no spinal deformity was present. In most instances of this type clinical evidence of involvement of other bones was lacking. In only two patients, one Silcock's and the other reported by Von Recklinghausen, was there cerebral pressure from cranial growths. Silcock's patient had a facial paralysis, whilst Von Recklinghausen's had hemiplegia. Both had mental symptoms, irritability, stupor, and finally coma.

The important symptom of the diffuse form of bone involvement is pain. It may be general, may be most marked in the legs and back, and may present the picture of nerve root pain. It is a pronounced feature in these patients, is often very severe, may be worse at night, and often requires sedatives. It is sometimes accompanied by stiffness in the back and great aggravation on motion. It may be the only important symptom except the loss of weight and strength and the anæmia. Tenderness is not usual.

Spontaneous fracture of the bones, or fracture after slight injury, is not frequent. It is noted only 5 times in the 43

[1] The case of Wolff is a doubtful one and is not included. The same is true of a case reported in the Westminster Hospital Reports, 1905, XIV, 322. Cruveilhier's case falls under this class clinically but he expressly states that the bones (vertebræ) were normal. Jullien is credited with publishing a case in his article on the prostate in the Nouveau Dictionnaire, but there is no original case in his article; nor is there an original case in the Paris thesis of Julien, 1895, No. 466, who is also credited in the literature. Fraenkel gives no details of his cases and they are not included. My second case is also reported by Moak in his article on the concurrence of carcinoma and tuberculosis. Cone's case is also reported by Young, Johns Hopkins Hosp. Reports, 1906, XIV, 607. Balloch's case was one seen by him with Dr. Thomas C. Smith of Washington, D. C.

ILLUSTRATION OF CASE II, SHOWING DEFORMITY OF THE CLAVICLE AND OF THE RIGHT SIDE OF THE CHEST.

cases. The femur, the humerus and the clavicle are the bones usually fractured. My first patient had multiple rib fractures.

The study of the pathological anatomy in this group of cases brings out many points of interest. The comparative infrequency of metastases in the viscera, the urinary bladder excepted, is one of these. This has been overstated, I think, as I found visceral metastases in 17 of the 42 cases, about one-third. The lungs were much more often affected than the other organs, the liver and kidney next in frequency, and the spleen, adrenals, and pancreas rarely. The escape of the spleen, resembling, as it does, the bone marrow in structure, seems remarkable, as Erbslöh notes. The serous cavities were not infrequently the seat of metastases; the pleura 10, the peritoneum 6, the dura 5 times, and the pericardium twice. It is only fair to say, however, that the visceral metastases are generally small and not capable of clinical detection.

Involvement of the lymph nodes was nearly always present, in only 8 of the 42 cases was it missed. The pelvic glands were noted to be the seat of metastases in 15, or a little over one-third of the cases. There was involvement of the glands within the abdomen in 24 cases, and those within the chest in 8 cases. The cervical glands were involved in 4, and the infraclavicular in 3 cases. The glandular involvement, therefore, usually occupied situations not easily accessible to palpation, and in relatively few cases were externally situated nodes enlarged.

The figures regarding bone involvement are open to some inaccuracy, owing to the fact that certain bones are much more likely to be explored on account of their accessibility. This must be taken into account, as must the fact that in many instances of osteoplastic carcinoma there is no external enlargement of the bones to attract the attention of the pathologist, and consequently metastases must have frequently been overlooked simply because they were not looked for. In the 43 cases I have collected the record of bone involvement is as follows:

	Cases.
Vertebræ involved in	35
Ribs involved in	30
Pelvic bones involved in	26
Femur involved in	25
Skull or face involved in	18
Sternum involved in	16
Humerus involved in	15
Tibia involved in	7
Scapula involved in	6
Clavicle involved in	6
Fibula involved in	2
Forearm bones involved in	1

It is apparent from these figures that metastases are most common in the most accessible bones, the femur and humerus accepted, and it must remain more or less of an open question whether the metastases would not have been found to be much more evenly distributed if the less accessible bones had been systematically searched. The metastases tend to occur in those parts of the bones which have the best blood supply, for example, in the proximal parts of the long bones. Histological examination shows that the type of carcinoma has no bearing on the occurrence of bone metastases, that the secondary growths nearly always originate in the medulla, and that the transmission is vascular rather than lymphatic. Secondary growths may originate beneath the periosteum, but this is not usually the case. The marked tendency to bone formation and its usual preponderance over bone destruction is a special feature of this form of bone carcinoma which I shall not especially describe, as it has been extensively discussed by Von Recklinghausen, Cone, Erbslöh, and Fischer-Defoy. Neither shall I discuss the various theories as to why the bones should be the special site of the metastases further than to state that there are two main views, the one supposing that the mechanical peculiarities of the circulation in the bone marrow favor the development and growth of the tumor cells, the other assuming that chemical conditions in the bone marrow are such that this tissue is especially adapted to the growth of cells of prostatic origin.

The results of this investigation may be summarized as follows:

1. Carcinoma of the prostate gives rise to metastases in the bones in a much larger proportion of cases than any other form of carcinoma; probably in at least two-thirds of the patients in whom the disease is allowed to run an unobstructed course.

2. The clinically apparent bone metastases may be single. If occurring in the long or flat bones they may be taken for primary bone tumors and removed as such. If occurring in the vertebræ they frequently give rise to spastic paraplegia.

3. There is a diffuse form of bony involvement without evident deformity of the bones in which intense pain in the bones, often associated with spinal stiffness and accompanied by the general signs of a malignant growth, is the prominent symptom.

4. Symptoms pointing to the urinary tract as the original site of the disease are lacking in perhaps one-third of the patients.

5. In all instances where a male patient, especially one over sixty, presents himself with an apparently primary tumor of a bone or with signs of paraplegia, or with bone pains of obscure origin, a complete examination of the urinary system is indicated, even though no symptoms of urinary disorder be present. Needless to say, the mammary gland, the thyroid, and the region of the adrenals should also be explored.

6. The high percentage of cases of bone metastasis in this form of tumor and the relative rapidity with which it may take place make it imperative that carcinoma of the prostate should be recognized and removed at as early a date as possible.

APPENDIX.

Analysis of the Symptoms and Signs in 24 Patients of Whom a Clinical History is Given.

Age of the patient:	
40 to 50	2
50 to 60	5
60 to 70	9
70 to 80	7
Not given	1

Duration of symptoms:

Under 1 year	7
1 to 2 years	6
2 to 3 years	5
3 to 4 years	1
Not given	5

Urinary symptoms:

	Cases.
Absent in	5
Not noted in	4
Present in	15
Enlarged prostate in	11
Retention in	1
Incontinence in	1
Dysuria in	8
Frequent micturition in	6
Pain in	4
Cystitis in	6
Hematuria in	1

Nervous symptoms:

	Cases.
Paraplegia in	8
Hemiplegia in	1
Facial paralysis in	1
Sphincter disturbance in	3
Irritability in	1
Stupor in	1
Coma in	1

General or local pain:

	Cases.
General bone pain in	1
Sciatic pain in	2
Loin pain in	5
Head pain in	1
Back pain in	5
Abdomen pain in	1
Chest pain in	2
Leg pain in	9
Bone tumor pain in	3

Bone changes.

Detectable enlargement in 12 patients:

In the femur in	1
" the frontal bone in	1
" the spine in	1
" the pelvic bones in	2
" the tibia in	1
" the ribs in	1
" the scapula and pelvic bones in	1
" femora and pelvic bones in	1
" legs, feet, and inferior maxilla in	1
" scapula and spine in	1
" ribs, pelvic bones and inferior maxilla in	1

Tenderness of bones in 6 patients.

Spontaneous fracture in 5 patients:

In the femur in	2
" the clavicle in	1
" the clavicle and ribs in	1
" the humerus in	1

Palpable superficial glands in 5 patients:

Inguinal glands in	2
Umbilical glands in	1
Cervical glands in	1
Inguinal, cervical, and subclavicular glands in	1

Analysis of 42 Autopsies, Especially as to Metastases.

Prostate Gland:

	Patients.
Enlarged in	35
Not enlarged in	2
Smaller than normal in	1
Not noted in	4

Visceral metastases noted in 25 patients:

	Cases.
In heart in	1
" pericardium in	2
" lungs in	11
" pleura in	10
" liver in	6
" spleen in	2
" kidney in	5
" adrenal in	2
" dura in	5
" pancreas in	2
" peritoneum in	6
" intestine in	3
" thyroid in	1

Gland metastases noted in 33 patients:

	Cases.
In pelvic glands in	15
" iliac in	8
" inguinal in	6
" abdominal in	25
" thoracic in	12
" cervical in	4
" subclavicular in	3
" axillary in	1
" parotid in	1

Bone metastases noted in all patients:

	Cases.
In vertebræ in	35
" ribs in	30
" pelvic bones in	26
" femur in	25
" skull or face in	18
" sternum in	16
" humerus in	15
" tibia in	7
" scapula in	6
" clavicle in	6
" fibula in	2
" bones of forearm in	1

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RELATIVE AORTIC INCOMPETENCY OF MUSCULAR ORIGIN.*

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As far as my experience goes, it would seem probable that relative aortic incompetency of muscular origin is not so infrequent as one is led to suppose from an examination of the literature. The important subject of the relation of cardiac dilatation to that of relative incompetency with its accompanying murmurs, however, is one that is still imperfectly understood. Dombrowski [1] invites attention to the fact, first pointed out by Wolf, that the surface of the mitral leaflets actually exceeds the orifice, and Kirschner and Garcin contend that the anterior flap alone suffices to close the mitral orifice, "even when the heart is considerably dilated."

There are two main categories of cases, which manifest relative aortic incompetency. An interesting and generally well-recognized group is that due to excessive fusiform dilatation of the aorta at its root. A similar condition obtains where an aneurysm of the aorta is situated just above the aortic cusps. Calvert [2] reported a case of acute dilatation of the aorta with double aortic and mitral systolic murmurs. In these instances, the diastolic murmur is occasioned by an eccentric stretching of the aortic ring. While most writers affirm the existence of relative aortic insufficiency of this description without lesions of the aortic valves, a few question its occurrence, *e. g.*, Guttman,[3] Tosenheim,[4] and others. The condition is by no means uncommon, but in the present discussion will be included only those cases belonging to the second group in which neither the segments are the seat of sclerosis, nor the walls of the aorta appreciably dilated; or in other words, only cases which are of muscular or neuromuscular origin will be described.

I believe there is ample support for the opinion that imperfect coaptation of the valves, due to defective nutrition, to decided anemia or disturbed innervation even, may cause a diastolic murmur which may or may not prove to be permanent (relative). Again an asthenic condition of the heart muscle, more particularly MacCallum's [5] fourth division or that encircling the left auriculo-ventricular region and the aorta, may produce relative aortic incompetency. Preble [6] states that relative aortic insufficiency is due to dilatation of the heart wall, and also that the diastolic murmur is occasionally produced by inflammation of the aorta. Aortitis, a subject which cannot receive extended consideration here, occurs more frequently in older subjects and as the disease progresses, the murmur is apt to disappear. Here it should be pointed out that a diastolic murmur due to overstretching of the aortic ring, from the presence of an aneurysm situated just above the orifice, may also absent itself at varying intervals of time.

I have observed that disappearance of the murmur may coincide with periods of absolute rest, while, *per contra*, increased activity of the circulation, the result of mental excitement and physical exertion, tends to reproduce the murmur for the reason presumably that the distending force within the sac is thereby increased. In the same category belong the cases due to high pressure in the aorta opposed to slightly diseased segments. These two last named varieties of aortic incompetency can be readily separated clinically from the myocardial form which is under discussion, by a consideration of the associated conditions and their etiologic significance.

In a paper on "Relative Insufficiency of Pulmonary Valves," Preble [7] has called attention to the anatomic and functional similarity of the aortic and pulmonary valves. Preble found six cases of the latter condition supported by autopsy, to which he added the report of a seventh from Herrick's ward in the Cook County Hospital.

Bramwell [8] claims that relative aortic incompetence is never muscular. Edwards,[9] however, has reported a case in which chronic fibrous myocarditis was present without valvular changes. The condition is also referable to still other degenerative lesions of the myocardium of the left ventricle. This view, which is extensively supported by clinical and post-mortem observations, as will be shown hereafter, is also corroborated by convincing experimental evidence. Thayer and MacCallum [10] produced artificially a loud diastolic murmur in the dog in eight instances; "this murmur sometimes replaced the second sound; sometimes the two sounds were heard in association." The character, seat of maximum intensity and area of transmission of these experimentally induced murmurs were similar to what is observed in aortic incompetency in man.

Thayer and MacCallum say further that, "The most interesting points brought out by these cases of aortic insufficiency would seem to be the intensity of the diastolic murmur at the ring, and its feebleness over the aorta above and over the right and left ventricles below, a condition in every way analogous to that observed in the human heart, and wholly in accordance with the well-known fact that the murmurs of aortic insufficiency are often very difficult to hear. Especially interesting was the production of a functional aortic insufficiency from dilatation, an observation supporting entirely the conception of those observers who have insisted upon the important part which the muscle of the left ventricle plays in the closure of the aortic ring."

Cases of relative aortic incompetency due to the toxic action

* Read before the Medical Society of the State of New York, January 27, 1909, and the Johns Hopkins Hospital Medical Society, March 15, 1909.

[1] Rev. de méd., Sept. 10, 1893.

[2] Interstate M. J., 1906, Vol. XIII, p. 237.

[3] Ztschr. f. klin. Med., 1883, Band VI, 131.

[4] Von Ziemsen: Handbuch d. spec. Pathologie.

[5] Wood's Reference Handbook of the Medical Sciences, Vol. IV, pp. 378-379.

[6] Memphis M. J., February, 1903, XXIII, p. 104.

[7] Loc. cit.

[8] Diseases of the Heart and Thoracic Aorta, p. 418.

[9] Am. J. M. Sc., October, 1908.

[10] Am. J. M. Sc., February, 1907.

of bacterial poisons on the cardiac muscles in the course of certain acute infectious diseases, *e. g.*, rheumatism, influenza, diphtheria, and pneumonia, may also occur, though rarely. It is of more than passing practical importance to note the cause of the dilatation when it arises under these circumstances for therapeutic and hygienic reasons. Lees,[11] Robinson[12] and others have enlarged upon this thought in the past, and the latter further invites attention to acute cardiac dilatation of nervous origin, giving rise to temporary systolic and diastolic murmurs.

While in this form of aortic incompetency the murmur may disappear as the result of marked improvement in the size and action of the heart in consequence of appropriate treatment, it is to be recollected that the diastolic murmur may also disappear when acute failure of the left ventricle supervenes in the course of the usual type in which degenerative changes in the segments occur. Obviously, the theme of our inquiry does not embrace the latter class. The pulse, it should be noted, is less collapsible in the variety of relative aortic incompetency under discussion, *i. e.*, muscular incompetency, and hypertrophy of the left ventricle is also less pronounced in some cases than in true aortic regurgitation due to chronic valvulitis. Dilatation of the left ventricle, however, may be of marked extent. The murmur of relative insufficiency is of unusual intensity and of musical quality (Groedel, Von Leube and others).

Muscular incompetency may also arise secondary to primary chronic valvulitis affecting the mitral segments during the stage of noncompensation. When extreme dilatation follows on mitral valve disease, there are two principal types of myocardial changes present—to wit: general fibroid and fatty degeneration.

Charles Lyman Greene[13] has directed attention to the importance of a modified second carotid tone as a concomitant of aortic regurgitation, and records cases in which the diastolic murmur was present temporarily, the second carotid being either inaudible or scarcely heard. On the other hand, murmurs of relative insufficiency, to which especial attention is directed in this paper, may be attended with a fair degree of carotid tone (as in Case II of my series, *vide infra*) in cases in which the valves are healthy, but slightly incompetent owing to an overstretched aortic ring.

I shall here quote from illustrative cases, and subsequently consider further the principal questions involved.

Case 1.—W. J. H., æt. 27 years, a physician; height, 5 feet, 2 inches; weight, 118 lbs.

Family History.—Both parents living, mother has been dyspeptic for ten years; father subject to epilepsy from the age of 23 to 33 years, then attacks disappeared (without operation); maternal grandmother has carcinoma of face.

Previous History.—Patient had the usual childish diseases; at ten years of age, had typhoid fever and at 21 years eczema, while two years since suffered from acute indigestion for a few days.

Social History.—Single, has given careful attention to diet, uses neither tobacco nor alcoholic intoxicants of any sort; on account of a large obstetric practice, the patient has been subjected to physical overstrain.

Present Illness.—This began about one month before he consulted me with gastric symptoms, discomfort, more particularly after food, distention of stomach by gas and troublesome palpitation with general nervousness at night. The patient is decidedly neurasthenic.

The physical signs reveal typical aortic regurgitation at an early stage, there being but little hypertrophy present, although evidence of a considerable degree of dilatation exists. There is arrhythmia as shown by abnormalities of both rhythm and volume of the radial pulse, which is full, although less collapsible than in typical aortic incompetency. The murmur is best heard at the inner end of the second right intercostal space, is rather loud, and is transmitted in the usual direction. The capillary pulse and throbbing vessels, so characteristic of this lesion, are both present. The blood pressure is 132 systolic and 120 diastolic, as a rule.

Examination of the urine and blood gave negative results. The treatment embraced careful regulation of the diet (the carbohydrates and saccharine substances being minimized), an increased number of hours for rest, and the use of small doses of digitalis, spartein sulphate, arsenic and strychnin in combination. As the result of this method of treatment, a slow and gradual improvement in the general condition supervened; the murmur became less pronounced in the course of six months, and reached the vanishing point at the end of one year. The absence of the diastolic murmur in this instance was at first temporary, but since taking two courses of the Schott treatment, one at Glen Springs, New York, and the other more recently, at Bad Nauheim, in connection with the measures previously adopted, it has not been audible during the past year and a half. The heart as shown by a physical examination is of about normal outline or size, and the usual secondary accompaniments of aortic regurgitation have also disappeared. A pulse-tracing taken November 10, 1908, shows definitely that all arterial evidence of the disease has been removed.

Case II.—Dr. H. L., æt. 44; weight, 135; height, 5 feet, 7 inches; father died of pernicious anemia at 65, mother of arteriosclerosis and nephritis at the age of 70. Among paternal uncles and aunts, rheumatism, apoplexy and nervous complaints prevailed. The patient had the usual diseases of childhood, including scarlatina; also repeated convulsions during the first four years of life. At the age of 17, and again at 18, had inflammatory rheumatism followed by a mitral lesion.

The social history furnishes the following points: Married, no children, physician by occupation for many years, during which time his habits as to eating and sleeping were most irregular; does not use alcohol, but tea and coffee to a moderate extent.

During the second attack of acute articular rheumatism, a mitral regurgitant lesion was discovered and the compensation remained uniformly good until six years ago, when it was lost as the result of repeated attacks of *la grippe*. Mental worry and exposure to inclement weather were probably contributory causes.

On admission, March 10, 1908, the patient exhibited marked dyspnœa with a sense of suffocation in paroxysms, and marked edema of the legs and thighs. The physical signs were those of combined mitral and tricuspid incompetency, the latter being attributed to relative insufficiency. Additionally, both in the carotid area and from the inner end of the second right interspace, downward along the left edge of the sternum, and outward to a point beyond the left mid-clavicular line, could be distinctly heard a diastolic murmur, moderately harsh and blowing in quality. On making an X-ray examination, the cardiac shadow

[11] Acute Visceral Inflammations, London, 1904, p. 296.
[12] Am. J. M. Sc., February, 1907.
[13] Archives of Diagnosis, April, 1908.

was found to extend practically from one side of the chest to the other.

The blood pressure was 125 systolic and 100 diastolic. The urinary analysis showed a heavy ring of albumin, a faint reaction for indican, and an excessively large number of broad hyaline and finely granular casts.

During the next four months, the patient's condition fluctuated considerably with, however, a downward tendency toward the grave, and on June 5, 1908, gangrene affecting the lower extremities supervened and carried off the patient in the course of three days. It should be stated that the diastolic murmur disappeared about two weeks prior to the fatal termination.

The post-mortem findings embraced the following points: The heart when removed weighed 790 grams. The ventricles, more particularly the left, showed hypertrophy associated with a moderate degree of dilatation. Both the right and left auricles were much dilated, the left enormously so with exceedingly thin walls. With the exception of a few atheromatous patches, the aorta and pulmonary artery were normal. Macroscopically, the aortic segments were normal, and the aortic ring was of about normal or slightly increased dimensions. On the other hand, the mitral leaflets were very much thickened and sclerosed, containing several calcareous deposits; these valves were markedly incompetent. Neither the tricuspid nor pulmonary artery valves showed any organic changes. The pericardium was somewhat roughened and the sac contained considerable serous fluid.

Dr. Edward M. L'Engle made a microscopic study of the aorta, the semilunar segments and myocardium near to the valve, and reported negative findings, excepting that the muscular structure showed a slight degree of brown atrophy and increased connective tissue.

CASE III.—D. B., æt. 58, white, native of Russia; father died at the age of 75, but cause not known; mother died suddenly at the age of 90, had been suffering from shortness of breath all her life. Four sisters living, and well, no brothers. All members of his paternal family died comparatively young, although as far as he knows they did not suffer from any hereditary diseases. On his maternal side, they all lived to an old age. Occupation until eight years ago was that of a presser; since then he has not done anything. Married, and a father of two children; youngest being eight years old. Uses tea and coffee freely diluted and sparingly; alcohol moderately; smokes four to six cigarettes daily, and does not pay any attention to diet or exercise; no venereal disease.

Previous History.—Thinks that he has had childhood's diseases. Suffered from scrofula and eczema until his 20th year, and from intestinal worms until his 30th year. When he first arrived here (30 years ago) he developed eczema on his legs; this persisted for only three months, and he has never had a rash since; several attacks of *la grippe*. Since childhood has had sudden attacks of syncope which lasted but a moment; these come on very frequently now—four or five times daily—and last much longer.

Present Illness.—Eight or nine years ago while walking on the street, he collapsed, was taken home and a physician called, who told him that he had heart disease. First came to the dispensary of the M. C. H. seven years ago when his disease was diagnosticated as mitral regurgitation. The patient has been under the care of Dr. Loewenberg since 1903, suffering from mitral insufficiency. In the autumn of 1905, he met with an accident (in a collision of cars); he was taken home in a semiconscious condition. On the day after the accident, Dr. Loewenberg discovered a distant murmur at the second aortic cartilage, diastolic in time

REPORTER.	DIASTOLIC MURMUR AND ITS VAGARIES.	ASSOCIATED MURMURS.	CLINICAL PECULIARITIES.	POST-MORTEM FINDINGS.	CAUSES.
Jaccoud[1]	Permanent	Mitral systolic		Dilatation of left ventricle due to synechia cordis; relative aortic and mitral regurgitation; valve leaflets normal.	Dilatation of left ventricle.
Peacock[2]	Not heard, due to asystole.	None	Rheumatic fever fourteen years previously; marked dyspnœa; edema present a few days before death; almost pulseless; arrhythmia.	Heart markedly dilated, especially left ventricle; all orifices increased in size; aortic valves and aorta healthy; mitral leaflets healthy, but incompetent.	Dilatation of left ventricle from failure of muscular power.
Litten[3]	Transitory murmur at the aortic area, but repeatedly disappearing after rest.	None	The secondary manifestations of aortic regurgitation with hypertrophy of left ventricle.		Of ventricular origin(?).
Edwards[4]	Permanent	None	Quincke's capillary pulse absent.	Valves normal; hypertrophy and dilatation of left ventricle; chronic fibrous myocarditis caused by sclerosis and thrombosis of coronary arteries.	Hypertrophy and dilatation of left ventricle.
Pitt[5]	Permanent	None		Early atheroma of aorta; aortic valves normal, but incompetent because of stretching; left ventricle greatly dilated and hypertrophied.	Dilatation of left ventricle.
Willson[6]	Permanent	Mitral systolic and presystolic; pulmonary and aortic systolic.	Previous attacks of inflammatory rheumatism, pericarditis (affecting mitral leaflets); complained of precordial pain; angina pectoris.	Heart enormously hypertrophied with dilatation; aorta slightly thickened; aortic leaflets normal; mitral orifice admits three fingers; its leaflets show slight puckering and thickening.	Marked hypertrophy with dilatation, especially of left ventricle.
Hamilton and Byers.	Appeared seven days before, and persisted until, death.	Soft systolic at apex—not transmitted; loud pulmonic systolic.	Profound secondary anemia; arteriosclerosis; emphysema; cystitis, due to polypoid growth.	Heart dilated with some hypertrophy of the left ventricle; aorta not dilated; valves normal and competent; slight atheroma of aorta.	Myocardial weakness, especially of bundle around auriculo-ventricular orifice and aorta.
Cautley[7]	Persisted for 26 days, with exception of 3 days; disappeared gradually, reappeared during attacks of mumps.	Mitral systolic	Followed acute rheumatism; pericarditis with effusion; recovery practically complete.		Dilatation of heart, probably due to myocarditis.

[1] Gaz. hebd. de méd., 1861, VIII p. 50.
[2] Tr. Path. Soc. Lond., 1862, XIII, p. 64.
[3] Deutsche med. Wchnschr., 1887, XI, p. 42.
[4] Am. J. M. Sc., October, 1895, p. 438.
[5] Tr. Path. So. Lond., 1898, XLIX, p. 46.
[6] Proc. Path. So. Phila., 1899, II, p. 81.
[7] Am. J. M. Sc., October, 1903, p. 671.
[8] Polyclin., Phila., March, 1907, XI, p. 42.

and transmitted downwards. That murmur persisted for nearly four weeks and then disappeared.

In February, 1907, he had an attack of constipation (paresis of bowel), following which attack, he again presented the aortic regurgitant murmur with symptoms of failure of compensation. At this time there were several other murmurs, a mitral stenotic, and surely a mitral regurgitant, and also a hemic. Since then the patient has been constantly kept on cardiac stimulants and when they have been withdrawn for three or four weeks, the aortic murmur has returned with signs of failure of compensation. The mitral regurgitant murmur was always present with the aortic diastolic murmur.

Blood pressure, systolic 142; diastolic could not be gotten. Urine negative as to albumin (except during periods of lost compensation), casts and glucose; a few epithelial cells, and a moderate amount of uric acid crystals were present.

It is interesting to note that the diastolic murmur in Cases II and III was due to mitral disease followed by failure of the left ventricle. This bruit, however, disappeared in Case II, with the development of extreme asystole, while in Case III such disappearance coincided with a diminution in the cardiac dilatation, and increased vigor of the myocardium as the result of treatment by cardiac stimulants.

The accompanying table includes a tabular statement of eight cases gleaned from the general literature. These, added to those herewith reported, make a total of 11 cases.

General Remarks.—Case I of my series was most probably an instance of relative incompetency of muscular and nervous origin without organic changes of any of the valve segments. In Cases II and III, the temporary aortic insufficiency was secondary to mitral incompetency due to chronic valvulitis. It is when the systolic mitral becomes soft and whiffing with rapid, feeble heart and increased dyspnœa, that the left ventricle is laboring and a diastolic aortic murmur becomes audible. Later still in the course of mitral disease, the diastolic aortic may, as stated above, disappear, in consequence of oncoming asystole. It can also be easily demonstrated that with improvement in the myocardial strength as the result of treatment whereby the dilatation is overcome, the aortic regurgitant murmur may disappear.

While these are instances in which relative aortic insufficiency supervenes in the course of chronic endocarditis affecting the mitral valves, it is well known that where these two murmurs are combined, the mitral systolic is in the majority of instances secondary to primary sclerotic endocarditis affecting the aortic segments. The possibility, however, in cases in which this association of murmurs is met with, of the existence of primary mitral disease, followed by relative aortic incompetency, should be, in view of the above cases, recollected.

Of the eight cases included in the above table, four showed organic changes in the mitral cusps at necropsy, while the aortic valves were apparently normal (and this was also true of Case II of my series), and the explanation of these cases of relative aortic incompetency may be reasonably thought to be dependent upon marked left ventricle dilatation after failure of compensation in the course of organic mitral incompetency with its classical murmur. These examples of relative aortic insufficiency confirm the independent observations in Cases II and III of my series. Now, while searching the literature, 21 cases were encountered in which the necropsy showed both left ventricle dilatation and morbid changes with more or less dilatation of the root of the aorta. It is not improbable that here the condition of the left ventricle also shares in the production of the relative aortic incompetency, but I have excluded all examples of the sort from the above tabular list of recorded cases.

Not only eccentric stretching of the aortic ring may result from dilatation of the left ventricle, but also a similar stretching of the root of the aorta, more particularly if it has been previously diseased—an ascending process. In other cases, the distending force is most probably exerted both within the aorta and the left ventricle simultaneously. At all events, it is not improbable that in cases in which dilatation of both the left ventricle and the root of the aorta is met with post mortem, the ventricular condition may have shared in the causation of the enlargement of the aortic orifice.

It is quite true that in cases in which no post mortem evidence is obtainable, other causes than myocardial weakness and dilatation may have been operative. On the other hand, the instances that came to necropsy place the possibility of a purely myocarditic origin of aortic incompetency beyond all doubt. Dilatation of the left ventricle should be taken into account in any effort to decide the cause of aortic diastolic murmurs when such dilatation is associated with other causative lesions. It may be stated here parenthetically that the converse is found in stenosis of this orifice due to "narrowing of the left ventricle immediately below the level of the valve, which is little if at all affected."

While the murmurs due to relative incompetency may, as already pointed out, disappear either when the left ventricle becomes extremely weak or in cases in which the dilatation bearing a causative relation to the murmur has been overcome as the result of appropriate treatment, it is important to separate these, as I have attempted to do above, from the organic murmurs, since the latter may likewise absent themselves either temporarily or permanently. Boyd refers to a case of the sort in which an aortic diastolic murmur was missing for two years after its detection in consequence of an attack of acute rheumatism. Greene reports cases met with in their incipiency with disappearance of the murmur. Saundby and Musser have reported instances of mutability and disappearance of organic murmurs originating at the aortic orifice. Indeed, as Strümpell observed, the murmur may be absent throughout the long course of the disease. Poynton asserts that in some cases, in which mitral and aortic lesions are combined, the latter may be slight and even disappear. He also calls attention to post-mortem investigations in which the aortic valves have been found to be slightly damaged and yet during life there has been no suspicion of aortic disease.

In the presence of the incipient lesions of aortic regurgitation, then, the murmur may display vagaries somewhat similar to those of functional origin, becoming continuous at a later date in a certain proportion of cases, at least, especially when

progressive degenerative changes in the aorta and valve segments are associated. One point, however, may be here emphasized, namely, that the aortic diastolic of organic origin is probably the most constant among the classical murmurs. At all events, if we except intercurrent acute infections which may cause its temporary disappearance, just as in the case of other organic murmurs, the preceding statement is doubtless correct.

Cases are also reported by Litten, Duroziez, Gerhardt, Von Leube and others, in which accidental diastolic murmurs were heard over the upper and mid-sternal regions, which murmurs were ascribed either to "*Sehnenflecken*" on the pericardium or originating in the veins, *e. g.*, subclavian, inferior vena cava. Some of the latter grow in intensity as we pass downward toward the lower sternal region, while others become more and more pronounced as the bell of the stethoscope is moved upward to the cervical vessels.

The *bruit de diable* may give rise to confusion, but if it be recollected that venous sounds have a different quality, become louder during inspiration, are not strictly synchronous with the second tone, and that the latter can be clearly heard to accompany the former adventitious sound, error can be avoided.

In conclusion, based upon my own studies and the observations of others, the cases of muscular relative incompetency at the aortic orifice may be placed in three well-defined divisions: (a) Cases of muscular and nervous origin that supervene in the course of fibrous myocarditis and other less serious conditions of the myocardium, independently of valvulitis or advanced organic changes in the aorta; (b) cases secondary to chronic valvulitis affecting the mitral segments with failure of the left ventricle, and (c) cases occurring in the course of or following acute infective diseases due to the action of the toxins upon the myocardium. Cases of purely nervous origin may also be met with occasionally.

There are on record a sufficient number of examples of relative incompetency of muscular origin to form a sub-class that should be more generally recognized than it has been in the past both for therapeutic and prognostic reasons. As in Case I of my series, the dilatation on which the murmur depends is not necessarily progressive and fatal, and apparent recovery may occur as in that instance. It is quite possible, indeed presumable, that toxic effects upon the myocardium may greatly diminish the contractile power of the heart, thus leading to muscular incompetency without producing detectable histologic changes. Persistent rest and the judicious use of remedies and eliminative measures will sometimes suffice to overcome the dilatation in these cases. In each of the first and third group of cases described above, the soft systolic mitral makes its appearance more frequently than the diastolic aortic. Obviously, additional illustrations of the sort of cases here narrated are needed.

Finally, the principal object of this paper is to show that functional incompetency of the aortic segments due to dilatation of the left ventricle is not sufficiently recognized.

DISCUSSION BY DR. HUGH A. STEWART.

I think there can be no question that a transient aortic insufficiency is a clinical possibility. The cases which have been cited by Dr. Anders are in themselves sufficient to convince the most sceptical. At the same time there is one condition with which this may be confounded, and it may not be unprofitable to refer to it briefly. This condition is a transient pulmonary insufficiency. Notwithstanding the precision of auscultation as a method of physical diagnosis, the distinction, in the absence of other signs and symptoms, between a pulmonary and an aortic diastolic murmur is still a matter of some uncertainty. Several years ago Gibson pointed out that a relative pulmonary insufficiency is by no means the rare condition which we are sometimes inclined to regard it. He was able to show experimentally that a rise of pressure in the pulmonary system may give rise to a dilatation of the conus arteriosus and a consequent mal-adaptation of the pulmonary cusps. Such a rise in pulmonary pressure, it is conceivable, may arise in many disturbances of the circulation, and, in view of the possibility of such a development, it might be contended that in those cases in which we have a transient diastolic murmur at the base of the heart, the seat of origin may be the pulmonic and not the aortic orifice. This, to my mind, is a most potent objection, for the identification of a murmur from its point of maximum intensity alone may be the cause of serious error. An aortic diastolic murmur may be heard loudest at the left side of the manubrium sterni, but it also may be heard best to the right side, *viz.*, over the pulmonary area. From the points of maximum intensity alone, therefore, it may be impossible to distinguish between the two, and it must be recalled that we may have an aortic insufficiency without any other sign or symptom—such as a Corrigan pulse or capillary pulsation. We have at the base of the heart two orifices, the aortic and the pulmonary, the former surrounded by a large mass of muscular tissue, the latter by only a few narrow strands. An evanescent diastolic murmur arises which from its position may be referable to either orifice. This murmur can have a causation only in muscular hypotonicity, and since a pulmonary insufficiency is so easy of experimental production and possesses so scanty a surrounding of muscle tissue, it is most natural to infer that such a transient murmur must arise from the pulmonic orifice unless we can prove experimentally that an impairment of the musculature surrounding the aortic orifice will permit of the development of a true aortic insufficiency. In 1904 J. B. MacCallum described in detail a band of muscular fibers, which, unlike the majority of the fibers of the heart, are confined entirely to one ventricle, and which constitute in great part the opening of the ventricle towards the aorta. It can be shown that this band of muscle differs in its mode of action and contraction from the other muscular strands in the ventricle. Its action is sphincter-like and its contraction partly diastolic. Its function undoubtedly is to aid the semilunar valves in the complete closure of the mouth of the aorta. In view of this fact we would, *a priori*, seek an

explanation of a transient aortic insufficiency in an impairment of the action of this muscle—the Aortic Ring Muscle, so-called. It can readily be shown that this assumption is justifiable, for if we expose the heart of an animal and insert a fine curved knife through the wall of the ventricle so as to divide the muscle without injuring in any way the aortic cusps, a diastolic murmur of aortic insufficiency will at once become audible. It seems to me, then, that we have in this abundant proof in the first place that the Ring Muscle is a factor in the complete closure of the aortic orifice, and that this muscle may, under pathological conditions such as Dr. Anders has described, fail to exercise this function completely, and so give rise to an aortic insufficiency without organic change in the aortic cusps.

OLD-TIME MEDICAL EDUCATION.*

By James J. Walsh, M. D., New York,

Dean and Professor of The History of Medicine and of Nervous Diseases at Fordham University School of Medicine, New York, N. Y.

We are so accustomed to think that what we are doing in medical education is so far ahead of anything that was accomplished in the past and especially in the far distant past, that to suggest that some of the medical schools of six or seven centuries ago did work quite as good as ours and perhaps even better than ours would seem like a cardinal heresy. After all "we are heirs of all the ages in the foremost files of time" and it would seem utterly impossible that we had not advanced in nearly seven centuries. Someone said that the nineteenth century would almost surely be stamped in history as the century of evolution. The idea of evolution has become so ingrained in all our thinking that none of us can possibly credit for a moment that men are not making great advances which can be measured almost by decades. To say that we were not advancing from century to century, and that even after five centuries there is very little of progress in a great scientific department must of course then be a shock to most people.

As a rule, the less one knows about the past the more one is sure that the present represents great progress over what has been accomplished. When I hear a man talking of the wonderful progress that we are making in every line of human accomplishment then I always conclude that he does not know any but the history of his own generation, and very little of that, with some vague generalities about the past. It is mighty easy in that case to talk about evolution and progress, but when one knows sufficient about the past, then progress becomes a very difficult thing to prove. Flinders Petrie, probably the greatest of living Egyptologists, to whom we owe nearly a thousand years of Egyptian history before 4000 B. C., declares that men have not advanced in their power to design art work or decorations or to make jewels of various kinds, and their endeavor to correct social abuses and the laws they drew up show that the human intellect does its work now after 6000 years just as it did in Egypt in the long ago. The sayings of Ptah-Hotep, our first book, show us that a father could give advice to his son about as well 6000 years ago with regard to the dangers of life and how to get along amid them as old Polonius in Shakespeare or as the wisest of fathers now.

There is of course no question of progress or evolution in literature. The great literary men are phenomena that occur at irregular intervals and the three greatest of them whose names are worthy to be mentioned in the same breath, while all others fall far below them, come in times and climes and countries far distant. Homer and Dante and Shakespeare are not in any course of evolution that we can think of. The same thing is true for art. Whether we consider architecture or sculpture or painting or decoration, the great nations of antiquity have done quite as well as any modern time, and, indeed, at the present moment we are far below what was accomplished in these lines at half a dozen different periods in the world's history. It is supposed, however, that in science there is a great advance. Anyone who knows well what was done at the Museum of Alexandria, that first great university of human history is not likely to take boasting about our advance in science any too seriously. That one university gave us the work of Ptolemy in astronomy which lasted for nearly 1500 years, of Archimedes in physics, representing some of the best of its kind ever done, Euclid in geometry in the form in which we still study it, and a great deal of work in the biological sciences, notably in human anatomy and in comparative anatomy. We have accumulated information since then, but we have not improved in methods nor in achievement so far as they took up problems seriously.

The more one knows about the past the less one thinks about the present. Of course it would seem very clear that in medicine, and, above all, in medical education, we far surpassed the generations of six and seven centuries ago, but for curiosity's sake it is worth while to make the comparison deliberately. When we began our work at the new Medical School at Fordham we realized that if we would attract attention we must do something that other medical schools were not doing. You know very well how hard it is to find something in medicine that Johns Hopkins is not doing. That was the problem we had before us. It seemed as though old-time medical history might represent the promising field in this direction—not that you had not paid attention to it, but that you had not specialized in it. We have turned up some of the old laws and the charters of the University Medical Schools and the lives of the old professors, and that is what I am going to talk about to you this evening. It is the offering of the newest of the University Medical Schools to that medical school which has done most to replace the medical school in this country in its proper position of a university department doing post-graduate work.

There is only one way in which the story of the past can be

* Paper read at a meeting of the Johns Hopkins Historical Club, February 8, 1909.

really read with assurance, and that is through its documents. If one wants to know what the medical education of a particular time was, find out what were the laws regulating the practice of medicine and the charter requirements of the medical schools. Fortunately some of the old-time laws and charters are not difficult to get at and so we can get a good idea of the status of the physician and of medical education six centuries ago. There is a law of the Emperor Frederick II, which is indeed startling to modern complacency. It requires four years of medical study after three years of preliminary study in the university, and then a year of practice with a physician before the young doctor may practice for himself. This law is dated 1241. When we recall what we were doing here in America in 1841, six centuries later, the comparison is rather odious. We asked two terms of 16 weeks each, though I believe they were maintaining *high* standards in some of the largest cities and demanded 20 weeks of attendance. A man might come to the medical school from the farm or the smithy, or the mines, or before the mast, and if he could write his name he was allowed to study medicine and did not find it hard to graduate. At the end of two brief terms, 32 weeks of lectures in all, he was given his degree as a doctor, the license to practice, which was in every State in the Union a license to practice not medicine, the Lord knows, but to practice on his patients until he learned some medicine.

Here is the old-time law as it is to be found in the collection of the laws of Frederick II, though I have taken it from von Töply's[1] "Studies in the History of Anatomy in the Middle Ages." I translated the law for the *Journal of the American Medical Association* some time ago, and quote it from there:

While we are bent on making regulations for the common weal of our loyal subjects we keep ever under our observation the health of the individual. In consideration of the serious damage and the irreparable suffering which may occur as a consequence of the inexperience of physicians, we decree that in future no one who claims the title of physician shall exercise the art of healing or dare to treat the ailing, except such as have beforehand in our University of Salerno passed a public examination under a regular teacher of medicine and been given a certificate, not only by the professor of medicine, but also by one of our civil officials, which declares his trustworthiness of character and sufficiency of knowledge. This document must be presented to us, or in our absence from the kingdom, to the person who remains behind in our stead in the kingdom, and must be followed by the obtaining of a license to practise medicine either from us or from our representative aforesaid. Violation of this law is to be punished by confiscation of goods and a year in prison for all those who in future dare to practise medicine without such permission from our authority.

Since the students can not be expected to learn medical science unless they have previously been grounded in logic, we further decree that no one be permitted to take up the study of medical science without beforehand having devoted at least three full years to the study of logic. After three years devoted to these studies he (the student) may, if he will, proceed to the study of medicine, provided always that during the prescribed time he devotes himself also to surgery, which is a part of medicine. After this, and not before, will he be given the license to practise, provided he has passed an examination, in legal form, as well as obtained a certificate from his teacher as to his studies in the preceding time. After having spent five years in study he shall not practise medicine until he has during a full year devoted himself to medical practice with advice and under the direction of an experienced physician. In the medical schools the professors shall during these five years devote themselves to the recognised books, both those of Hippocrates as well as those of Galen, and shall teach not only theoretic but also practical medicine.

We also decree as a measure intended for the furtherance of public health that no surgeon shall be allowed to practise, unless he has a written certificate, which he must present to the professor in the medical faculty, stating that he has spent at least a year at that part of medicine which is necessary as a guide to the practice of surgery, and that, above all, he has learned the anatomy of the human body at the medical school, and is fully equipped in this department of medicine, without which neither operations of any kind can be undertaken with success nor fractures be properly treated.

In every province of our kingdom which is under our legal authority, we decree that two prudent and trustworthy men whose names must be sent to our court, shall be appointed and bound by formal oath, under whose inspection electuaries and syrups and other medicines be prepared according to law and be sold only after such inspection. In Salerno in particular we decree that this inspectorship shall be limited to those who have taken their degree as masters in physic.

We also decree by the present law that no one in the kingdom except in Salerno or in Naples [in which were the two universities of the kingdom] shall undertake to give lectures on medicine or surgery, or presume to assume the name of teacher, unless he shall have been very thoroughly examined in the presence of a government official and of a professor in the art of medicine. [No setting up of medical schools without the proper authority.]

Every physician given a license to practise must take an oath that he shall faithfully fulfill all the requirements of the law, and in addition that whenever it comes to his knowledge that any apothecary has for sale drugs that are of less than normal strength, that he shall report him to the court, and besides that he shall give his advice to the poor without asking for any compensation. A physician shall visit his patient at least twice a day and at the wish of his patient once also at night, and shall charge him, in case the visit does not require him to go out of the village or beyond the walls of the city, not more than one-half tarrene in gold for each day's service.[2] From a patient whom he visits outside of the village or the wall of the town, he has a right to demand for a day's service not more than three tarrenes, to which may be added, however, his expenses, provided that he does not demand more than four tarrenes altogether.

He (the regularly licensed physician) must not enter into any business relations with the apothecary nor must he take any of them under his protection nor incur any money obligations in their regard.[3] Nor must any licensed physician keep an apothecary's shop himself. Apothecaries must conduct their business

[1] "Studien zur Geschichte der Anatomie im Mittelalter, Robert Ritter von Töply. Leipzig und Wien, Franz Deuticke, 1898.

[2] A tarrenus or tarrene in gold was equal to about thirty cents of our money. Money at that time had from ten to fifteen times the purchasing power that it has at the present time. An ordinary workman at this time in England received about four pence a day, which was just the price of a pair of shoes, while a fat goose could be bought for two and a half pence, a sheep for one shilling two pence, a fat hog for three shillings, and a stall-fed ox for 16 shillings (Act of Edward III. fixing prices).

[3] Apparently many different ways of getting round this regulation had already been invented, and the idea of these expressions seems to be to make it very clear in the law that any such business relationship, no matter what the excuse or the method of it, is forbidden.

with a certificate from a physician according to the regulations and on their own credit and responsibility, and they shall not be permitted to sell their products without having taken an oath that all their drugs have been prepared in the prescribed form, without any fraud. The apothecary may derive the following profits from his sales: Such extracts and simples as he need not keep in stock for more than a year, before they may be employed, may be charged for at the rate of three tarrenes an ounce.[4] Other medicines, however, which in consequence of the special conditions required for their preparation or for any other reason, the apothecary has to have in stock for more than a year, he may charge for at the rate of six tarrenes an ounce. Stations for the preparation of medicines may not be located anywhere but only in certain communities in the kingdom as we prescribe below.

We decree also that the growers of plants meant for medical purpose shall be bound by a solemn oath that they shall prepare their medicines conscientiously according to the rules of their art, and so far as it is humanly possible that they shall prepare them in the presence of the inspectors. Violations of this law shall be punished by the confiscation of their movable goods. If the inspectors, however, to whose fidelity to duty the keeping of the regulations is committed, should allow any fraud in the matters that are entrusted to them, they shall be condemned to punishment by death.[5]

Of course it will be thought that this law was an exception. Frederick II is one of the greatest men in history, and he might easily have reached a great expression of law-giving with regard to medical education and practice that would anticipate progress for many centuries. There is no reason, however, to consider that this is so, since we have other documents which show that what Frederick made into a law for the Two Sicilies was expressed in various papal documents, the charters of universities of that early time. There are two or three Bulls of Pope John XXII founding medical schools in connection with the universities already existing that show exactly the same requirements as Frederick's law, and that go into such details as make it very clear that university authorities had recognized the possibilities of abuses creeping in and took definite precautions to prevent them. As a matter of fact, Frederick's law, if we may judge from our own experience, is much more likely to be the expression of a gradual growth in the demand from physicians that the profession should be protected from the intrusions of the less educated. That is how we secured our own laws, and it seems not unlikely that history is repeating itself in this regard. The Bull of Pope John XXII, which was issued February 18, 1321, runs as follows:

While with deep feelings of solicitous consideration we mentally revolve how precious the gift of science is and how desirable and glorious is its possession, since through it the darkness of ignorance is put to flight and the clouds of error completely done away with so that the trained intelligence of students disposes and orders their acts and modes of life in the light of truth, we are moved by a very great desire that the study of letters in which the priceless pearl of knowledge is found should everywhere make praiseworthy progress, and should especially flourish more abundantly in such places as are considered to be more suitable and fitting for the multiplication of the seeds and salutary germs of right teaching. Whereas some time ago, Pope Clement of pious memory, our predecessor, considering the purity of faith and the excelling devotion, which the city of Perugia, belonging to our Papal states, is recognised to have maintained for a long period towards the church, wishing that these might increase from good to better in the course of time, deemed it fitting and equitable that this same city, which had been endowed by Divine Grace with the prerogatives of many special favours, should be distinguished by the granting of university powers, in order that by the goodness of God men might be raised up in the city itself pre-eminent for their learning, decreed by the Apostolic authority that a university should be situated in the city and that it should flourish there for all future time with all those faculties that may be found more fully set forth in the letter of that same predecessor aforesaid. And, whereas, we subsequently, though unworthy, having been raised to the dignity of the Apostolic primacy, are desirous to reward with a still richer gift the same city of Perugia for the proofs of its devotion by which it has proven itself worthy of the favour of the Apostolic See, by our Apostolic authority and in accordance with the council of our brother bishops, we grant to our venerable brother, the Bishop of Perugia, and to those who may be his successors in that diocese the right of conferring on persons who are worthy of it the license to teach (the Doctorate) in canon and civil law, according to that fixed method which is more fully described and regulated more at length in this our letter.

Considering, therefore, that this same city, because of its convenience and its many favoring conditions, is altogether suitable for students and wishing on that account to amplify the educational concessions hitherto made because of the public benefits which we hope will flow from them, we decree by Apostolic authority that if there are any who in the course of time shall in that same university attain the goal of knowledge in medical science and the liberal arts and should ask for license to teach in order that they may be able to train others with more freedom, that they may be examined in that university in the aforesaid medical sciences and in the arts and be decorated with the title of Master in these same faculties. We further decree that as often as any are to receive the degree of Doctor in medicine and arts, as aforesaid, they must be presented to the Bishop of Peurgia, who rules the diocese at the time, or to him whom the bishop shall have appointed for this purpose, who having selected teachers of the same faculty in which the examinations are to be made, who are at that time present in the university to the number of at least four, they shall come together without any charge to the candidate and, every difficulty being removed, should diligently endeavour that the candidate be examined in science, in eloquence, in his mode of lecturing and anything else which is required for promotion to the degree of doctor or master. With regard to those who are found worthy, their teachers should be further consulted privately, and any revelation of information obtained at such consultations as might redound to the disadvantage or injury of the consultors is strictly forbidden. If all is satisfactory the candidates should be approved and admitted and the license to teach granted. Those who are found unfit must not be admitted to the degree of doctor, all leniency or prejudice or favour being set aside.

In order that the said university may in the aforesaid studies of medicine and the arts so much more fully grow in strength, according as the professors who actually begin the work and teaching there are more skillful, we have decided that until four or five years have passed some professors, two at least, who have secured their degree in the medical sciences at the University of Paris, under the auspices of the Cathedral of Paris, and who shall have taught or acted as masters in the beforementioned University of Paris, shall be selected for the duties of

[4] Three and sixpence an ounce seems very dear, but this is the maximum.

[5] The first pure drug law.

the masterships and the professional chairs in the said department in the University of Perugia, and that they shall continue their work in this last-mentioned university until noteworthy progress in the formation of good students shall have been made.

With regard to those who are to receive the degree of doctor in medical science, it must be especially observed that all those seeking the degree shall have heard lectures in all the books of this same science which are usually required to be heard by similar students at the universities of Bologna or of Paris, and that this shall continue for seven years. Those, however, who have elsewhere received sufficient instruction in logic or philosophy having applied themselves to these studies for five years in the aforesaid universities, with the provision, however, that at least three years of the aforesaid five or seven-year term shall have been devoted to hearing lectures in medical science in some university and according to custom, shall have been examined under duly authorised teachers and shall have, besides, read such books outside the regular course as may be required may, with due observation of all the regulations which are demanded for the taking of degrees in Paris or Bologna, also be allowed to take the examination at Perugia.

We are not likely to accept this high state of medical education in the thirteenth and fourteenth centuries without further protest. We are almost sure to think that while they may have required three years of preliminary study and four years of medicine, these studies were idle and trivial or distant in significance or something very different from our methods of teaching in the modern time. This is the attitude of mind that men always assume with regard to the past. It cannot have been as good as the present. Fortunately here once more we have some good evidence. With regard to the preliminary education probably Huxley's words would carry more weight than anyone else's. In reviewing the curricula of the mediæval universities in his inaugural address as rector of the University of Aberdeen he said with regard to them:

The scholars studied grammar, rhetoric, arithmetic and geometry, astronomy, theology and music. Thus their work, however imperfect and faulty, judged by modern lights, it may have been, brought them face to face with all the leading aspects of the many-sided mind of man. For these studies did really contain, at any rate in embryo—sometimes, it may be in caricature—what we now call Philosophy, Mathematical and Physical Science and Art. And I doubt if the curriculum of any modern university shows so clear and generous a comprehension of what is meant by culture as the old trivium and quadrivium does.

With the preliminary education disposed of so favorably to this olden time the mental protest will settle itself on the medical and surgical teaching of these old universities. We are likely to think that what they did in medicine was surely absurd or that they did nothing at all in surgery worth while talking about. It is not well to use the word "absurd" in medicine, because people in glass houses should not throw stones.

Prof. Charles Richet, of the Department of Physiology of the University of Paris, confessed not long since in an article in the French magazine, "La Revue des Deux Mondes," that the therapeutics of any period of history always seemed absurd to the second generation afterward. Over a dozen times in history this has been practically true. It is possible that we shall escape this fate, but there are some among us who are not so sure. They accepted many curious medical myths in the middle ages. The stars influenced human constitutions, climate produced disease, changes in the weather were responsible for epidemics, and they used the most curious remedies. Surely we will not blame them so much if we recall how much uric acid has meant to our generation, how much auto-intoxication seems to mean to many physicians and how curiously mistaken we were with regard to consumption when we thought it hereditary.

We, too, have used curious remedies. Every year sees the rise of a new cure for consumption; we have seen Perkins' tractors come and go, we have had Hahnemannism, we are now in the midst of Christian Science and Osteopathy. Really with the glass in our houses so thin it is rather important not to throw stones at our colleagues of the thirteenth century. They seem to have adopted the use of iron, they regulated the doses of opium, they arranged a method of or perhaps two or three methods of anæsthesia, and they regulated climatic treatment rather well. Down at Montpelier Gilbert, the Englishman, hung the room of a small-pox patient with red curtains and put them over the door and the window. He was anticipating Finsen in modern times. How far his idea was adopted we do not know. One thing is sure, that while these people did use excrementitious materials and many deterrent remedies, they also succeeded in doing much more than we think. I recently published a brief review of a book on eye diseases by Pope John XXI, the Ophthalmological Pope of the Thirteenth Century,[6] from which it is very clear that they knew much more about the treatment of the eye than we think they did.

It is probably in surgery that we would be sure that these people had done nothing worthy of our consideration at the present time. Most of us are perfectly certain that there has been such a great development of surgery during the last half century as the world never dreamt of before. As a matter of fact it is in surgery that these old-time medical educators and writers most nearly approached us, and the chapter of the "History of Surgery" is a never-ending surprise. After all on general principles it is here that one would expect to find some real progress in the olden time because surgery is much more definite and founded on scientific principles, while medicine is largely empiric and rather an art than a science even at the present time. A great century of surgery began with William of Salicet, teaching at the University of Padua. What great work William did I shall let Sir Clifford Allbutt, the Regius Professor of Medicine at the University of Cambridge, tell you, for I should almost expect that you would hesitate to accept what I have to say of him without question, since I am so much interested in this great thirteenth century. The most surprising thing is that William taught the possibility of union by first intention nearly seven centuries ago.

Prof. Clifford Allbutt, in his "Historical Relations of Medicine and Surgery" down to the sixteenth century said:

[6] Catholic Churchmen in Science: Philadelphia: The Dolphin Press, 1909.

Both for his own great merits, as an original and independent observer, and as the master of Lanfranc, William Salicet (Guglielmo Salicetti of Piacenza, in Latin G. Placentinus de Salicetonow Cadeo), was eminent among the great Italian physicians of the latter half of the thirteenth century. Now these great Italians were as distinguished in surgery as in medicine, and William was one of the Protestants of the period against the division of surgery from inner medicine; a division which he regarded as a separation of medicine from intimate touch with nature. Like Lanfranc and the other great surgeons of the Italian tradition, and unlike Franco and Ambroise Paré, he had the advantage of the liberal university education of Italy; but like Paré and Wurtz, he had large practical experience in hospitals and on the battlefield. He practiced first at Bologna, afterward in Verona. William fully recognized that surgery cannot be learned from books only. His surgery contains many case histories, for he rightly opined that good notes of cases are the soundest foundation of good practice; and in this opinion and method Lanfranc followed him. William discovered that dropsy may be due to a *durities renum;* he substituted the knife for the Arabist abuse of the cautery; he investigated the causes of the failure of healing by first intention; he described the danger of wounds of the neck; he sutured divided nerves; he forwarded the diagnosis of suppurative disease of the hip, and he referred chancre and phagedaena to *coitus cum meretrice.*

Of William's great disciple Lanfranchi, or as his name has been gallicized Lanfranc because he did his teaching at Paris, Sir Clifford has almost as much to say. Perhaps the most interesting feature of Lanfranc's life for us who are tracing the story of medical education is the fact that the faculty of the University of Paris recognizing that a great new school of surgery had arisen in Italy, and, wishing that the university should have the advantage of it, sent a thousand miles down to Italy and invited Lanfranc, whose reputation had reached them, to come and be the Professor of Surgery at the University of Paris. That story itself is the contradiction of nearly every thought that we foster with regard to the Middle Ages. We are apt to think of them as narrow, impractical, uninterested in others, occupied with themselves, not knowing what others were accomplishing, but here is a single fact that "makes ducks and drakes" of all our *a priori* reasoning. Perhaps the most interesting feature remains. Lanfranc went to Paris, established a great school of surgery, and the tradition that he left behind him made the French the greatest surgeons of Europe until the middle of the nineteenth century. If anything in the world would make us realize how important a leader of thought may be, this should.

Sir Clifford Allbutt said of this great Professor of Surgery:

Lanfranc's "Chirurgia Magna" was a great work, written by a reverent but independent follower of Salicet. He distinguished between venous and arterial hemorrhage, and used styptics (rabbit's fur, aloes, and the white of egg was a popular styptic in elder surgery), digital compression for an hour, or in severe cases ligature. His chapter on injuries of the head is one of the classics of mediæval surgery. Clerk (cleric) as he was, Lanfranc nevertheless saw but the more clearly the danger of separating surgery from medicine.

After Lanfranc came Mondeville. He was almost as great as either of the two supreme teachers who preceded him. Pagel, of Berlin, one of our greatest living authorities in the history of medicine, recently wrote an article on one phase of Mondeville's career for the Festschrift in honor of Professor Binns. This tells the story of how Mondeville employed venesection. It has a particularly interesting paragraph with regard to the necessity of properly impressing the patient's mind before a venesection was undertaken, because otherwise one did not get as good results, and, sometimes, as a consequence of dispiritment, the blood did not flow as freely as it should. Mondeville's discussion of the indications for venesection shows, according to Pagel, how careful a man he was and how thoroughly he recognized the usefulness and the limitations of this mode of treatment.

After Mondeville comes the greatest of them all—Guy De Chauliac, the Father of Modern Surgery. Because he was a Papal physician I have sketched his life at considerable length in my book on "The Popes and Science,"[1] though all that I have to say of him practically comes from Pagel, Clifford Allbutt, Nicaise Portal, Malgaigne, and Chauliac's own great book, the "Chirurgia Magna," written, as he tells us himself, as a *solatium senectutis.*

Chauliac's right to the title of Father of Surgery will perhaps be best appreciated from the brief account of his recommendations as to the value of surgical intervention, for conditions in the three most important cavities of the body, the skull, the thorax, and the abdomen. These cavities have usually been the dread of surgeons. Chauliac not only used the trephine, but laid down very exact indications for its application. Expectant treatment was to be the rule in wounds of the head, yet when necessary, interference was counselled as of great value. His prognosis of brain injuries was much better than that of his predecessors. He says that he has seen injuries to the brain, followed by some loss of brain substance, yet with recovery of the patient. In one case that he notes, a considerable amount of brain substance was lost, yet the patient recovered with a slight defect of memory only, and even this disappeared after a time. He lays down exact indications for the opening of the thorax, that *noli me tangere* of surgeons of all times, even our own, and points out the relations of the ribs and the diaphragm so as to show just where the opening should be made in order to remove fluid of any kind.

In abdominal conditions, however, Chauliac's anticipation of modern views is most surprising. He recognized that wounds of the intestines were surely fatal unless leakage could be prevented. Accordingly he suggested the opening of the abdomen and the sewing up of such intestinal wounds as could be located. He describes a method of suture for these cases and even invented a needle holder. To most people it would seem absolutely out of the question that such surgical procedures could be practiced in the fourteenth century. We have the definite record of them, however, in a text-book that was the most read volume on the subject for several centuries. Some of the surprise with regard to these operations will vanish when it is realized that during the thirteenth century in Italy a method of anæsthesia by means of opium and man-

[1] Fordham University Press, N. Y., 1908.

dragora was in common use, having been invented by Ugo da Lucca and Chauliac must not only have known of it, but must have employed it frequently. We have nothing from him directly bearing on this subject, but then even in our own time surgeons do not discuss anæsthesia, but assume a knowledge of it.

Hernia was Chauliac's specialty, and in it his surgical judgment is admirable. He did not hesitate to say that many operations for hernia in his time were done, not for the benefit of the patient, but for the benefit of the surgeon's pocket—a remark that will strike a sympathetic cord in many medical minds even at the present time. I have a copy of an old-time cut that shows a surgeon of the thirteenth century operating for hernia with the patient inverted on a slanting plank—an exaggerated Trendelenburg position—that shows how the mechanical side of surgery was developed at this time. Chauliac's rule was that a truss should be worn, and no operation attempted unless the patient's life was endangered by the hernia. It is to him that we owe the invention of the method of taxis, or manipulation of a hernia, to bring about its reduction, which was in use until the end of the nineteenth century. He emphasized very strongly that trusses could not be made according to general rules, but must be adapted to each individual case. He invented several forms of truss himself, and in general it may be said that his manipulative skill and his power to apply mechanical principles to his work are the most characteristic of his qualities. This is particularly noteworthy in his chapters on fractures and dislocations, in which he suggests various methods of reduction and realizes very practically the mechanical difficulties that were to be encountered in the correction of the deformities due to these pathological conditions. In a word, we have a picture of the skilled surgeon of the modern time in this treatise of the fourteenth century surgeon.

Chauliac's book is confessedly a compilation. He has taken the good wherever he found it, though he adds modestly enough, that "his work also contains whatever his own measure of intelligence enabled him to find useful (*quæ juxta modicitatem mei ingenii utilia reputavi*)." Indeed it is the critical judgment displayed by Chauliac in selecting from his predecessors that best illustrates at once the practical character of his intellect and his discerning spirit. What the men of his time are said to have lacked is the critical faculty. They were encyclopædic in intellect and gathered all kinds of information without discrimination, is what is usually said of mediæval writers. No one can say this of Chauliac, however, and above all he was no respecter of authority merely for the sake of authority. His criticism of John of Gaddesden's book shows that the blind following of those who had gone before was his special *bête noire*. His bitterest reproach for many of his predecessors was that "they followed one another like cranes, whether for love or fear, he would not say."

It must not be thought, however, that it was only with the coarser applications of surgery that Chauliac concerned himself. He was very much interested in the surgical treatment of eye diseases, and wrote a monograph on cataract, in which he gathers what was known before his time and discusses it in the light of his own experience. The writing of such a book is not so surprising at this time, if we recall, as I have suggested, that in the preceding century the famous Pope John XXI, who had been a physician before he became Pope, and under the name of Peter of Spain, was looked up to as one of the distinguished scientists of his time, had written a book on eye diseases that has recently been the subject of much attention. Pope John had much to say of cataract. Chauliac's method of treating cataract was by depression. His care in the selection of patients may be appreciated from his treatment of John of Luxemburg, King of Bavaria, blind from cataract, who consulted Chauliac in 1336, while on a visit to Avignon with the King of France. Chauliac refused to operate, however, and put off the king with dietary regulations.

The more one reads of Chauliac's work, the less is one surprised at the estimation in which he has been held wherever known. Modern writers on the history of medicine have all been enthusiastic in their admiration of him, just in proportion to the thoroughness of their acquaintance with him. Portal, in his "History of Anatomy and Surgery," says: "Finally it may be averred that Guy de Chauliac said nearly everything which modern surgeons say and that his work is of infinite price, but, unfortunately, too little read, too little pondered." Malgaigne declares, Chauliac's "Chirurgia Magna," "a masterpiece of learned and luminous writing." Prof. Clifford Allbutt says of Chauliac's treatise: "This great work I have studied carefully and not without prejudice; yet I cannot wonder that Fallopius compared the author with Hippocrates, or that John Freind calls him the Prince of Surgeons. It is rich, aphoristic, orderly and precise."

Julius Pagel, in Puschmann's "Handbook of the History of Medicine," says:

Chauliac represents the summit of attainment in mediæval surgery and laid the foundation of that primacy in surgery which the French maintained down to the nineteenth century.

The medical profession had then an excellent status at this time. The requirements in education in the medical schools of the universities of the thirteenth century were reflected in the laws of the time, making it impossible for any but the thoroughly educated physician to practice medicine at least in the more populous districts. This state of affairs was evidently brought about by an educated public opinion which had come to look upon the medical school as a university department to be entered only after under-graduate training had been completed. As a consequence of this state of mind we have seen the magnificent examples of the products of these real university medical schools. They were men who did original work of the highest kind in medicine and above all in surgery. Medicine as a science was not developed for many centuries yet, but these university-trained physicians who represented, just as have both the Regius Professors of Physic in England in the twentieth century—Osler at Oxford and Allbutt at Cambridge—the separation of medicine from surgery,

did magnificent original work in developing the art of surgery. There is very little that we have accomplished in the modern time that they did not anticipate. The group of men from William of Salicet through Lanfranc and Arnold of Villanova, including Yperman of Belgium, Ardern of England, down to Guy de Chauliac, the great Father of Modern Surgery, were as great contributors to medicine as have ever lived.

One would be tempted to say, and say it seriously, that Paris at the end of the thirteenth and the beginning of the fourteenth century was doing at least as good work in its medical department as the Medical School of Johns Hopkins is accomplishing at the present time. Certainly the group of men associated with Paris did wonderful original work and wrote marvellous books that were to be far-reaching in their influence. The astonishing thing about it all is that there should have been in subsequent centuries such a great descent from the standards thus set up. How did it happen that nearly six centuries after this time here in America we required only two terms of 16 weeks each before we gave the degree of Doctor of Medicine, and required so little preliminary training that if a man could read and write, and not very well at that, he was permitted to take up the medical course. Of course in the pioneer days in America we needed physicians so badly for our rapidly growing population that there was some excuse. Later on this awful condition was fastened on us by the unwillingness of teachers to give up the large pecuniary benefits and reputation derived from the medical school system arranged, as it was, quite apart from any organic connection with the university.

Of course this question is a portion of that larger question how do men forget what they have once accomplished? The Suez Canal is said to have been opened once before our time, and America to have been discovered twice before Columbus; Troy, after having been destroyed and built several times, was utterly lost to human memory until Schliemann found it again for us; the very palaces of the Roman emperors in Rome itself became covered with an accumulation of soil and dust and were entirely forgotten, though Rome was never without inhabitants. The more one goes back to the story of the past the more does one realize that human history is a series of discoveries followed by forgettings and then re-discoveries, though man is supposed to be so much interested in his own progress and to be in such a state of evolution that this should apparently be impossible.

One is tempted to think of Goethe's lines in which, though it is Mephistopheles who uses the expression in order to discourage man, there is surely to be seen in it some reflection of Goethe's own thought with regard to man and his ways. Mephistopheles says:

> Original! move onward in your pride,
> Oh! how the spirit would sink mortified,
> Could you but know that long ago,
> All thoughts whatever, dull or clever,
> That cross the twilight of your brain,
> Have been o'er and o'er again,
> Occupying other men.[1]
> Age is, in sooth, a fever cold,
> With frosts of whims and peevish need:
> When more than thirty years are told,
> As good as dead one is indeed:
> You it were best, methinks, betimes to slay.

[1] Perhaps in the light of a misapprehension of former times at Johns Hopkins it may not be out of place to quote the lines of the recent graduate Baccalaureus to which Mephistopheles' expression is almost the direct answer.

PROCEEDINGS OF SOCIETIES.

THE JOHNS HOPKINS MEDICAL SOCIETY.

March 15, 1909.

Meeting of the Johns Hopkins Hospital Medical Society, Dr. Frank R. Smith, the president, in the chair.

I. Relative Aortic Incompetency of Muscular Origin. DR. J. M. ANDERS, Philadelphia.

See p. 205 of this number.

DISCUSSION.

DR. FUTCHER.—We owe a debt of gratitude to Dr. Anders for pointing out this probable etiology of certain cases of aortic insufficiency. Relative aortic insufficiency is now kept in mind, but usually considered due to dilatation of the ring from some cause above, as aneurysm of the aortic arch.

It is possible that a considerable percentage of the murmurs are not constant. This is observed on ward visits. And these are probably due to weakened tone of the heart muscle.

Cabot has pointed out that a certain number of cases of pernicious anemia have a diastolic murmur which is not constant and disappears with improvement in the blood picture.

DR. ANDERS, in reply.—The murmur alone does not distinguish pulmonic from aortic insufficiency. But the secondary manifestations of capillary pulse and collapsing pulse are definitely distinct. The pulse is less collapsing than in the true organic insufficiency, and the hypertrophy is less.

Hypotonicity of all the muscle in pernicious anemia is the cause of relative insufficiency. The explanation of the aortic ring muscle and its importance is satisfactory.

Aortic insufficiency of this type is important to keep in mind for prognostic and therapeutic purposes, particularly those following the acute infectious fevers.

April 5, 1909.

Meeting of the Johns Hopkins Hospital Medical Society, Dr. Norton presiding in the absence of Dr. Smith, the president.

1. Vegetative Acrtitis with Aneurysm of the Ascending Portion of the Aorta. DR. G. E. HOLTZAPPLE, York, Pa.

After a careful description of syphilitic aortitis, the author then read the following history of a case:

L. T., male, age 42, photographer, came to my office May 18, 1908, and complained of feeling badly, having pain in the head, and a severe aching in all of his extremities.

His appetite was poor and he felt sore over the whole of the abdomen.

There was no vomiting, no diarrhœa.

His throat was congested but not painful.

Family History.—His father died from epithelioma of the face, aged about 65; his mother died from lobar pneumonia at about the same age. Most of his sisters and brothers are nervous, otherwise I am unable to learn of any important family history.

The patient had inflammatory rheumatism at 15. He had follicular tonsilitis several times since. He had considerable trouble with more or less soreness of his throat which would require local treatment. At no time did he have any ulcers. He was sometimes troubled with lumbago, also with hives.

He had pleurisy with effusion in 1900. At times he suffered from hyperacidity since this illness requiring antacids and nerve sedatives. These attacks always occurred when he was very nervous due to overwork and worry and had not enough sleep. He had attacks of sick headache before he was 22, not afterward. He denied having had any form of venereal disease.

On his first visit to my office I made no careful examination. I prescribed an antiseptic gargle, and internally salol, acetophenetidin and caffein. He continued doing some work. Four days later he returned not much improved. I advised him to rest which he did. In a few days he was improved and he resumed work in the gallery until June 3, when he was again in the same condition as before.

He now took to his bed. He complained of pain in the head and back, also in the extremities. He looked sick, color of lips, mucous membranes and skin was pale. There was no cyanosis, no jaundice, no œdema, no dyspnœa, but slight cough. There was no eruption or discoloration of the skin. There was no delirium, nor marked nervous symptoms. He had moderate fever, and the pulse was accelerated. The face was pale, at no time flushed. The tongue was moist, slightly coated with a white fur, edges and tip were not particularly clean. There was no epistaxis.

The chest was well formed, expansion good, about the same on both sides. The percussion note was slightly impaired above the clavicles. Few moist râles were heard on deep breathing and coughing.

The præcordia was very slightly prominent. At this time he did not complain of any pain or discomfort over the cardiac area. Cardiac impulse was a little diffuse. The apex impulse was a little outside of the left nipple line and a little lower than normal. It was rather strong. There was a systolic thrill felt over the aortic area. Area of deep cardiac dullness was increased to the left. Heart sounds were all heard and of about normal intensity.

There was a systolic murmur heard over the whole præcordia and even outside, having its maximum intensity over the aortic area. It was loud and rough and transmitted into both carotids, but heard more distinctly over the right than over the left. It was heard with less intensity over the apex and not transmitted much to the left. There was also heard an aortic diastolic murmur over the aortic area, along the left border of the sternum, and with diminished intensity at the apex.

The pulmonic second sound was not accentuated. The pulse seemed regular in force and rhythm to the palpating fingers, about 100 per minute. It was distinctly collapsing, especially when the arm was elevated. A capillary pulse could be made out. A pistol shot sound was well marked over the femorals, but no Duroziez's murmur. These physical signs I had often noted since March, 1900, and without any marked change, except a slight increase in the roughness and intensity of the systolic murmur and thrill. There was no diastolic shock over the base.

The abdomen was full but not distended. There were no rose spots, or dilated veins visible. On deep inspiration one could see the descending shadow of the spleen but not of the liver. The spleen was very easily felt and tender. It was considerably enlarged. There was tenderness along the right costal border, but the edge of the liver was not distinctly felt. The vertical line of liver dullness was somewhat increased. The whole abdomen was slightly tender, most marked in the right iliac fossa. There was typical gurgling in this area. The patient often complained of burning in the stomach. There was no vomiting and no diarrhœa. Enemata were often required to move the bowels.

There were no lymphatic glands palpable, including the epitrochlears. There were no visible scars.

There were no special motor or sensory symptoms present. The deep reflexes were slightly exaggerated. There was no ankle klonus, no Babinski's sign, no paræsthesia.

Special senses were not involved, there were no mental symptoms. Urinalysis was negative, except it gave a distinct diazo reaction.

This condition continued with very little change, the evening temperature ranging from 100 to 102 F., for five weeks when the temperature remained normal. The treatment had been symptomatic, rest and liquid diet. His diet was gradually increased but after two weeks he rapidly relapsed into the same condition he was in before.

He was again put on a liberal liquid diet, rest was enjoined and treatment was symptomatic. Water was given very freely. After five weeks the temperature again reached the normal. There was no trained nurse in charge and the temperature was only taken at my visits usually toward evening.

The clinical features during the second febrile course were just the same as during the first.

The patient was again put on soft food and gradually on a regular diet, but at the end of two weeks he again had fever toward evening and at the same time severe pain in the lower extremities, especially below the knees. In the morning his temperature was usually lower and he was free from pain. I was unable to account for the pain in his lower extremities, and this he only had when his temperature was considerably elevated, reaching in the evening 103 to 104 F.

There was no localized swelling or tenderness along the bones. The muscles were sore. The temperature, touch, pain and deep muscle sense did not seem to be impaired. Motor power was diminished due to emaciation. Deep reflexes continued slightly exaggerated. The spleen continued enlarged, but was gradually diminishing in size until it was only palpable by placing patient on right side with thighs flexed. The area of splenic dullness was distinctly increased at all times.

At this period there was at times some tenderness over the region of the gall-bladder.

During the middle of September he had a number of severe chills about 11 a. m. followed by fever and sweat. On examining the blood, I found no plasmodia. Leucocytes were now 8000. I administered sufficient quinine to give him the therapeutic test, but without any improvement. The temperature now became irregular, and he had profuse sweats.

He now suffered from severe pains in his legs and shoulders, in the chest, over the præcordia and in the region of the spleen. He was taken with very sudden pain in the left chest, but spleen did not increase in size, and there was no friction rub audible and no bloody sputum nor dyspnœa.

The patient now began to look very sick. The diagnosis was

not clear to me. At first I thought it might be an atypical typhoid, then later tuberculosis, malaria, trichiniasis, endocarditis, but the leucocytes had only been 8000.

On September 27, Dr. Futcher saw the case with me and he felt morally certain it was a case of malignant endocarditis. A few days after this the patient began to have cutaneous infarcts and these later on became innumerable over the thighs, hips and lumbar regions. He now had an infarction of the spleen. The onset of pain was sudden, the organ increased rapidly in size and was very tender. A to and fro friction rub became audible over the sternum at a level of the second and third costal cartilages, nowhere else audible over the cardiac area. He had dull diffuse pain in this region. There were no physical signs of an effusion in the pericardium. At the suggestion of Dr. Futcher he was given potassium iodide, which was increased to gr. XXV t. i. d. when it disagreed much with his stomach and had to be discontinued. Emaciation was slow and anæmia increased gradually. During the latter part of October œdema began to develop in the ankles, which gradually extended up his lower extremities.

His abdomen now became distended and moist râles became numerous throughout the chest. The œdema now became very marked involving scrotum and penis.

The pulse became gradually more frequent and weaker but was regular. He had more cough. He now had attacks of dyspnœa, of sudden onset, attended by very marked anxiety. Stimulants gave but partial relief. He felt a sense of oppression in the region of the heart. These attacks recurred at irregular intervals and until the night of November 7, when he died suddenly in such an attack.

At the autopsy I found diffuse bronchitis, hypostatic congestion, at the base of both lungs, and both apices studded with tubercles.

There was a large infarct in the spleen, which organ was much enlarged. The liver was considerably larger than normal. No infarction of liver, kidneys or intestines.

There was a small quantity of fluid in pericardium. On the anterior surface of the ascending portion of the arch was an aneurysm which had about half a dozen sacs within, all filled with vegetations which crumbled out very easily on handling it.

There was an aortic stenosis and insufficiency due to previous disease, and degenerative change following an endocarditis.

In the right heart I found two large pale, firm clots of fibrin extending from the right auricular appendix to the tricuspid orifice which I believe caused his sudden death.

Discussion.

Dr. Futcher.—I saw this patient when he presented the typical picture of aortic insufficiency. The chills, fever, and sweats suggested a vegetative endocarditis with septicæmia, a fresh endocarditis upon old sclerotic aortic valves. This autopsy has shown a vegetative endocarditis in the aneurysmal sacs which themselves have bulged into the pericardial sac. The aneurysm was not suspected. It was impossible to make it out. It is quite probable this is a luetic endarteritis. These may be mycotic aneurysms with a vegetative endocarditis.

Dr. Barker.—We are grateful to Dr. Holtzapple for showing us so interesting and rare a specimen. It shows how much can be done by a general practitioner in following cases and obtaining autopsies.

The case suggests to me not syphilitic aortitis, but mycotic aneurysms. It is a wonderful instance of it! They are usually multiple, about the body in the smaller vessels, due to infected emboli and the resultant softening of the vessel walls. In a few cases they arise as a true infection of the arterial wall. Dr. Osler, in 1885, described three, the size of cherries, and a fourth, the size of a billiard ball, in the wall of an aorta. Holtz reported two in the aorta due to the gonococcus.

This man was 42, had no history of lues but one of tonsilitis, rheumatism, and old endocarditis. These all point to mycotic aneurysms. The pains in the extremities may have been due to aneurysms there.

Dr. MacCallum.—Dr. Holtzapple's review of the literature was admirable! I was present when Chiari and others thrashed out the subject of luetic aortitis six years ago. The solution is in studying for spirochætæ. This specimen is probably one of mycotic aneurysms.

II. Tumors of the Male Breast, with a Report of an Unusual Case.

Gerald Griffin, M. D., Albany, N. Y.

Tumors of the male breast are by no means infrequent, but they are rare enough to justify a review of the literature on the subject and to report an interesting case that has recently been under my observation. The case was a bilateral adenofibroma of both breasts in a male adult occurring at different intervals within a short time.

The male and female breasts have about the same anatomical nature at birth and up to the time of puberty. At puberty the female breast undergoes a series of functional changes. Slight enlargement with some pain is sometimes noticed in the male breast, but the gland usually remains rudimentary, and except in rare instances never functions.

Many theories have been advanced to explain the rarity of new growths in the breast of men as compared with women. Warfield in his excellent paper on carcinoma of the male breast offers the most satisfactory one. He recognizes the fact that the gland in the first place is apt to be injured during the period of lactation, and secondly that it passes through a series of changes which have a tendency to make it susceptible to new growths of various kinds. Up to the time of puberty the gland is similar in both sexes. After puberty the gland in the male becomes quiescent, and in the female, undergoes a growth of the acini and ducts, with an increase in the blood supply. After each pregnancy proliferation takes place in the gland with an increase in fibrous tissue. With the danger of accidents occurring during the activity of the glands, it is not surprising to find the larger per cent of new growths occurring in the female breast. The same etiological factor, however, is present in the causation of carcinoma. If we are to look upon carcinoma as being of an infectious nature, and if the bacillus is demonstrated in all cases, our present theories as to the comparative rarity of the disease in the male breast will of necessity be exploded.

Schuchardt in 1884 gave the following interesting résumé of the literature up to that time: "Milton in 1857 reported 40 cases of carcinoma; Wagstaffe in 1876, 21 cases. Paulin Poirer reported 62 cases, including carcinoma, sarcoma, tubercle, etc. Schuchardt describes 172 neoplasms. Of the 172 cases there were 2 adenomata; 1 enchondroma; 3 fibromata; 1 myoma; 1 cutaneous deposit, 15 cystic; 2 tuberculous. The

remainder were carcinomatous. Syphiloma may also occur. Of the 89 patients having cancer of the breast none were under 20 years.

3	were	between	20-29
8	"	"	30-39
26	"	"	40-49
27	"	"	50-59
16	"	"	60-69
9	"	"	70-79

One occurred at the age of 84. In 42 of the 53 cases the axillary glands were involved.

Williams, in his studies of the statistics previous to 1889 of the University College, Middlesex, and St. Thomas' and St. Bartholomew's Hospitals of London, relating to new growths occurring in the male breast, gave one-half of one per cent as the average as compared with the other organs of the body, while compared with the female the average was about one in one hundred. In Warfield's series of cases the age at which the growth appeared varied from 40 to 70. The youngest was 12 years and the oldest 91 years. Out of 300 operations for tumors of the breast Elting had only one occurring in the male breast, that of an adeno-fibroma in a male patient aged 45.

Sarcomatous growths are occasionally met with in the male breast and usually of the spindle cell variety. Shields in his book describes a number of cases and calls attention to the liability of a sarcoma developing from a mole on the breast when irritated. Connell, in an elaborate review of the literature on sarcoma, found 4 cases occurring between the ages of 20 and 25; 3 between the ages of 30 and 35; 2 between the ages of 35 and 40; 1 between the age of 45 and 50; 5 between the ages of 50 and 55; 1 between the age of 55 and 60, and 1 at the age of 73. Axillary involvment was present in 9 cases, the tumor was found adherent in 5 cases, to the pectoral muscle and fascia in 3 cases. The location in 11 instances was given in the right breast, and in 6 instances in the left. The growth was recurrent in 3 instances and in the others the duration varied from 1 week up to 7 years. In only one instance was trauma mentioned. There were in the collection 12 spindle-celled sarcomas; 7 round-celled; 3 cystic; 3 melanotic; and 3 chloroma; there were 15 recoveries and 4 deaths.

Of the benign tumors of the male breast, cysts and adeno-fibromata are the most common. Fibromata, enchondromata, lipomata, papillomata may be met with, but not so frequently as the first named. In Schuchardt's series of 172 neoplasms occurring in the male breast, only 25 were of benign origin, including 2 which were tuberculous.

Cysts may be, and often are, of a malignant nature, and may be found in the skin, in the region of the pectoral muscles, in the ducts or in the connective tissue spaces. Cysts of the breast may suppurate and form a mammary abscess or they may appear just beneath the nipple, causing a bluish discoloration, which may lead you to suspect the presence of carcinoma.

C. F. Beadles in 1892 reported a case of pure fibroma of the male breast with the following comment: "The case is of interest, not only on account of the comparative rarity of a tumor in the male breast, but also the extreme rarity of a simple fibroid tumor of the mammary gland."

The case I am to report is of interest, not only on account of its comparative rarity, but also from the fact that the growth appeared in both breasts within a period of four weeks.

HISTORY OF THE CASE.

Mr. P. McG., age 45, single, nativity Ireland, by occupation an hotel proprietor, consulted me first on October 1, 1908. He complained of a lump in his left breast.

Family History.—Father died from unknown causes; mother died of typhoid fever. No history of cancer, tumor or tuberculosis in any member of his family.

Personal History.—He had the usual diseases of childhood. Had an attack of rheumatism three years ago. Denies ever having had any venereal disease. Smokes and drinks moderately.

Present Illness.—About seven weeks ago patient struck his left breast against the edge of his bed. Since that time he has noticed his breast slowly enlarging. There has been no pain, but he worries considerably about it, fearing cancer may develop.

Physical Examination.—Patient is a well nourished individual, weighing 190 pounds; his height is 5 feet 11 inches. Skin and mucous membranes normal. Abdomen rather prominent and apparently well supplied with adipose tissue. Varicose veins present in both legs. Thorax well developed, with no evidence of cardiac or pulmonary disorder. The left breast is symetrically enlarged and occupied by a tumor the size of a small hen's egg. It is firm and not painful, freely movable, and occupies an area surrounding the nipple about 3 cm. in circumference. The right breast presents no evidence of enlargement and is apparently normal. There is no axillary involvement on either side.

The diagnosis of adeno-fibroma was made and early removal of the tumor advised. The patient entered the hospital on October 5, 1908, and on the following day, under ether anæsthesia, the growth was removed. It involved only the breast tissue, although rather adherent to the pectoral muscle. The wound healed by primary union and the patient left the hospital in a few days. The macroscopic appearance of the tumor was that of an adeno-fibroma and the microscopical report by S. B. Walbach of the Bender Laboratory, Albany, N. Y., confirmed the diagnosis. On November 10, 1908, four weeks after leaving the hospital, the patient again consulted me, complaining of a growth in his right breast. He first noticed it about a week after leaving the hospital and it grew so rapidly he thought it best to have it removed. On examination, the tumor was found similar in every way to the previous one in his left breast occupying a space just beneath the nipple. On the next day under local anæsthesia, the breast was removed and was found to contain an adeno-fibroma about the size of an English walnut. The laboratory report confirmed this diagnosis also. The patient has entirely recovered and up to the present time has had no further trouble.

Much has been written about the origin of adeno-fibromata, and a good deal of doubt has been expressed as to the possibility of having a pure fibroma without the presence of some epithelial cells. Paul Theile says that the fibro-adenoma, the cysto-sarcoma phyllodes, and the mastitis chronica cystica, together form a group of diseases of the breast gland, which originate from the same elementary histologic changes, and which are distinguished only by the more or less marked circumscription, and the predominating proliferation of the connective tissue in some, and of the epithelium in other cases. He also writes that it is impossible to demonstrate clinically when malignant degeneration begins and it is therefore im-

portant to remove all circumscribed forms of tumors. The histologic examination should be carefully made, as early carcinoma may be confined to a single area.

Schimmelbush, in an interesting comment on adeno-fibromata, writes: "They were first described by Cruveilhier as growths furnished with a connective tissue capsule, freely movable, never forming connection with the muscles or pectoral fascia, and only forming adhesions with the skin when some special irritation exists. The size of these tumors varies very much, some being as large as a child's or man's head. There is no relation, however, between the size and age of the tumor. Fibro-adenoma is more frequent in early life, but is seen sometimes in patients over 50 or 60. Cruveilhier named them 'fibroma' at first, subsequently admitting their glandular character. Pure fibroma of the breast is extremely rare. During the last three years all the mammary tumors in Bergman's clinic have been examined, and not a single fibroma has been found."

Bloodgood reported six cases of diffuse hypertrophy occurring in the male breast, only one breast being involved. The gross and microscopical appearances of the six cases resemble adeno-fibroma. He gives the time of onset from three weeks to two years and advises early removal, as he believes sarcoma and carcinoma may develop, especially sarcoma. Since reporting the above six cases, Bloodgood has observed two cases of bilateral diffuse hypertrophy of the male breast.

Patterson in 1892 reported three cases of adeno-fibromata; two occurring in the breasts of girls before puberty, and one in the breast of a male, aged 24, the first tumor of the kind he had observed.

Monro in 1892 reported a case of adeno-fibroma of the male breast, following a kick received from a horse 18 months previously.

Jacobson of Syracuse reported an interesting group of cases in 1897 of tumors affecting the male breast. His first case was one of a large epithelioma with axillary involvement in a man aged 70. The second case was a sarcoma in a patient aged 77, with axillary involvement. Both succumbed from metastases within three years of the time of operation. The third case was one of fibro-adenoma in a man aged 52, appearing about six months following an accident in which he fell striking his breast. The tumor grew very rapidly, and while there was no involvement, it was thought best to empty the axilla. Jacobson looked upon fibro-adenoma as being the rarest condition encountered in a large number of cases he quoted, it having appeared but once in the male breast as against 400 times in the female.

From the above review of the literature on the subject of tumors of the male breast, it is readily seen that such growths while not common occur frequently enough to make an early diagnosis important. It is often impossible clinically to determine when malignancy begins, and all tumors should be therefore looked upon with suspicion and their early removal advised.

I have been unable to find recorded a case parallel to the one I have added to the literature to-night and trust that it may prove a stimulus to surgeons to report any similar condition coming under their observation.

Discussion.

Dr. Barker.—There was a case on Ward F this winter of an old man with carcinoma in aberrant breast tissue in the left axilla. On removal it proved to be adeno-carcinoma. Situated in the left anterior axillary line, it must have been of aberrant mammary gland tissue.

III. Use of Scarlet Red in Epitheliation of Granulating Wounds. Dr. J. S. Davis.

See the preceding number of the Bulletin.

Discussion.

Dr. Barker.—Has the effect of scarlet red been studied upon embryos? It is a remarkable therapeutic effect and gives great hope of the success of drugs!

Dr. Cone.—I have used this stain in Albrecht's laboratory and found a relation between it and the fat throughout the layers of the skin. Only in the stratum granulosum is the fat in close relation to the nucleus. Here is where active nuclear division takes place. Here is where regeneration occurs. And there is probably some affinity between the fat and the stain which it takes. Dr. Welch considers this very likely.

NOTES ON NEW BOOKS.

Concerning Lafcadio Hearn. By George M. Gould, M. D. With a Bibliography by Laura Stedman. (*Philadelphia: George W. Jacoby & Co., Publishers.*)

Biographies, as a rule, are mere narratives of events and have no scientific interest except that they furnish data for study by specialists. Dr. Geo. M. Gould has long been using such material for his biographic clinics, in which he presents the symptoms of the diseases suffered by certain eminent men, but he has now written a biography of a new kind, in which the symptoms are the foundation and not mere chronological incidents, though in this case it is not so much a study in pathology as in abnormal psychology. To be sure, every biographic study is that of the abnormal, for if a man has accomplished anything of sufficient importance to warrant the publication of a biography, he must be markedly different from the hundreds of millions who pass through life with the crowd, without a single achievement showing the possession of an unusual talent. Lombroso and other students of genius have been able to show a profusion of abnormalities in each great man of the world, for it is an almost invariable rule, that if the developing ovum is so unstable as to be diverted from the path in which heredity guides, it will depart as a whole, and abnormalities will be found in every part and tissue—and by heredity is meant the reaction of the protoplasm to its environing forces. Unlikeness to parent is the rule, simply because the environment can never be an exact repetition of that in which the parents or more remote ancestors developed.

The medical profession must wake up to the tremendous power of the environment to modify organisms, and realize that great

abnormality means that great forces have operated to prevent inheritance. In Hearn's case, unfortunately, there is so little known of his ancestry that we cannot tell what he would have been had not these forces existed, nor is there the slightest clew as to what were the causes of the abnormalities. We can only study the result—the poor, undersized, myopic artist, shy to a degree and with a standard of ethics all his own—a characteristic, by-the-way, of every genius. He was not a creator in any sense of the word, but a translator of the creations of others, a transformer, mirror or echo. But he was a peculiarly warped reflector, which clothed the reflex in masterful English with such added beauties that his writings seem destined in time to take a place with those of Poe, who was essentially a creator. Curiously enough the grewsome occupied much of the attention of these two minds. In this mirroring of environment, Hearn was not different from any other artist, be he actor, painter or singer.

It has become a canon of ethics to say nothing ill of the dead, and to magnify their good. Writers generally follow this rule, so that biographies are notoriously incomplete and inaccurate, if not actually untruthful. Gould has been bitterly criticized by some of Hearn's friends, who resented the seeming violation of ethics in describing the mental peculiarities of the dead artist, but they should be thankful that he has shown that Hearn's well-known acts were not the result of deliberate viciousness, but merely what we must expect from the abnormal, who are also invariably defective in some way. Hearn worked with the brain tools he had and his materials were only those perceptions his defective physique brought to his tools. All, except the psychologist, forget that the brain is such a complex organ with so many billions of cells, that by the ordinary law of chance it is practically impossible for two minds to be alike, even among those we are pleased to call normal men. Among the abnormal, vast differences are inevitably found, and while no one dreams of blaming a brainless idiot for his inability to produce any thoughts, it does seem strange that we think that a man born with an extraordinarily constructed brain is to be blamed or praised for the work of that organ. Men must think with the tools they were born with and deserve no more credit than Caruso does for the possession of a wonderful larynx. An explanation of why a man has lived his particular life is far different from a mere enumeration of its evil sides. No doubt the critics have in mind the frightful injustice done to Poe by his early biographer, who gave him a bad reputation with the very flimsiest of justification, but in Hearn's case there is a scientific attempt to explain what has been so painfully apparent in all accounts of this curious word-colorist. It is not so much a dissection by a friend as an apology.

Man is made up not only of what heredity gives him, but also the modifications due to the forces of the environment, be they prenatal poisonings and malnutrition or post-natal factors good and bad. Gould has added another thought that "character" is a compound of the environment working on this organism. We have no control over our perceptions and must get along with those brought to us by a notoriously imperfect physique. They may be so distorted, hazy or colored as to give us, as they did to Hearn, a very incorrect idea of the world in which we find ourselves. This is a materialistic view no doubt, but it is the inevitable result of modern psychology, and will go far in explaining the apparent inconsistencies of great men, their absurd mistakes in matters outside of their proper sphere and the extreme inaccuracy of their perceptions and resulting conceptions in affairs for which they are built. A myopia may be the result of some adverse environing factors modifying the developing eye, and in turn it bcomes part of the environment profoundly modifying "character."

Gould's great contention is that "the body is just as much a part of the environment as the world itself," or even more so, and that bodily excellences and defects exercise a profound influence upon the developing mind; and by mind he uncompromisingly means an immaterial spiritual entity and not the mere function of the brain cells. Darwinian biologists stop at the influence of the world on the body, Gould goes a step further.

It is to be hoped that more such studies will be made and a scientific explanation given as to why we are what we are. Criminals should not be the only ones studied. They have occupied the center of the stage long enough, and anyhow half or more of them are perfectly normal men, who as children have been buffetted by adversity or even taught to be criminals. But every extraordinary man is worthy of study to find why he is extraordinary. Hearn is merely one. His abilities and deficiencies are only exaggerations of the powers and weaknesses of the average man. Shyness, for instance, is always accompanied by bitter animosities due to the sufferer's inability to find out the real conditions at first hand. Misunderstandings disappear by personal discussions. Nor are the sensual characteristics more than the exaggerations of normal emotions, and seem mild in comparison to what is known of those of transcendent genius. Nor can we say that such men are unhappy, for that is a condition with a million standards—they live their lives and apparently love life as much as the gilded youth or the denizen of the slums.

There is entirely too much repetition in the book, which would be more forceful in a scientific sense if much contracted, but that would destroy its literary value for it is a monument to Gould's remarkable command of words. It is a book well worth while, for it will introduce the reader to some of the beauties of Hearn's works, which unfortunately are not yet popularized. There is an excellent bibliography and that most unusual thing—a long chapter of appreciations and epitomes of Hearn's work.

C. E. W.

Veterinary Pathology. By PROFESSORS FRANZ FRIEDBERGER and EUGEN FRÖHNER. Translated by M. H. HAYES, F. R. C. V. S. With notes on Bacteriology by PROFESSOR R. TANNER HEWLETT, M. D., F. R. C. P., etc. Sixth edition (revised and enlarged). $8.00 net. (*Chicago: W. T. Keener & Co., 1908.*)

Every up-to-date veterinarian is acquainted with Friedberger and Fröhner. Until the publication recently of Hutyra and Marek's exhaustive text-book (originally issued by the authors in both the Hungarian and German languages), the work of Friedberger and Fröhner was an absolute necessity in the library of the veterinarian, public sanitarian and student of comparative medicine. Given a pre-eminent place among the Germans, such prominent French veterinarians as P. J. Cadiot and J. N. Ries esteemed it highly enough to give their countrymen in 1891-1892 an authorized translation from the second German edition. In 1895 there appeared in this country an unauthorized English translation, based largely upon the French work of Cadiot and Ries. Of questionable value then, Zuill's translation is now entirely out of date, having been made at the best only from the third German edition of the original work. Thus there was little that could appeal to the English reader until the appearance of Law's five-volume Practice (1896-1903).

In 1898 appeared the first installment of an authorized translation of Friedberger and Fröhner, by Captain M. H. Hayes, widely known among English veterinarians as a keen observer and incisive writer upon a great number of veterinary topics. This Volume I, entitled Infectious Diseases, was superseded in 1904 by a second edition based upon the fifth (1900) German edition. Its companion volume, on the Non-infectious Diseases of Animals, appeared in 1905, under the editorship of John Dunstan, M. R. C. V. S., this change being made necessary by the sad fact of Capt. Hayes' death.

Capt. Hayes' widow, Mrs. Alice Hayes, now submits to the pub-

lic what she is pleased to call an "exact, authorized translation of the sixth edition of Professors Friedberger and Fröhner's Veterinary Pathology." In performing this task, Mrs. Hayes has seen fit to return to the arrangement of volumes and chapters that exists in the German work.

Three qualifications are necessary in a translator of a work of this kind: a thorough acquaintance with the language in which the original work was written, a perfect control of the language into which the work is translated and a familiarity with the science unfolded in the work. These qualifications are displayed in this translation in a most marked and pleasing way. Not once does the technical language blunder or mar the rhythm of a sparkling and fascinating English that never fails to do full justice to every German thought or word.

Stop! That last statement must receive one qualification, and herein the reviewer proves his title by playing the part of critic. One solitary exception requires to be made. On page 261 of Volume II, under Cholera and Plague of Birds, we read, "Next to diphtheritic inflammation of the mucous membrane, chicken cholera is the most important and most common disease of poultry." In the same volume, page 416, under Diphtheria of Fowls, we find, "Speaking generally, this form is, next to typhoid, the most common and most dangerous epizootic among fowl." It must be understood here that fowl typhoid and fowl cholera are the same disease. Now, what the German does say, page 251, sixth edition, is this, "Fowl cholera along with (*neben*) fowl plague (*Hühnerpest*) and the diphtheritic inflammation of the mucous membrane the most important and most frequent epizootic of poultry, was, so it is stated, known in ancient times." Page 403, of the same German edition, is correctly rendered by the second translation above given. According to Hayes, Friedberger and Fröhner contradict themselves by saying in one place that next to fowl diphtheria, fowl cholera is the most common; while in another place they say that next to fowl cholera (typhoid), fowl diphtheria is the most common. The difficulty is that the translator has used an identical English expression, "next to," for the two German words, "*neben*" and "*nach*," apparently forgetting that the "next to" of "*neben*" means beside, along with, together with. The "next to" of "*neben*" denotes association; the "next to" of "*nach*" implies order, gradation. One is disposed to say with Horace, "Aliquando bonus dormitat Homerus." Some considerable familiarity with both the original and the translation leads to the conclusion that this form of inaccuracy is a solitary instance.

It is to be hoped that there is but a single instance, also, of another inaccuracy that occurs in the first quoted passage. We are told, as quoted above, that this is "an exact . . . . translation of the sixth edition." Now, as a matter of fact, the opening sentence under "Cholera and Plague of Birds" is a translation of the fifth edition, but not of the sixth edition. The fifth edition associates cholera and diphtheritic inflammation in importance and frequency; the sixth edition adds *Hühnerpest* to the group. In view of the fact that the article on *Hühnerpest*, which appeared first in the sixth edition, has its proper place in the translation, one cannot but think that this is only another instance of Homeric nodding.

The work suffers, as such works are likely to suffer, by its failure to present, in the form of editorial editions, certain of the important advances in medicine which have taken place between the writing of the original work and the making of the translation. A notable instance occurs in the article on rabies. One is surprised in reading a book with the 1908 imprint to find that positive diagnosis of rabies is to be made only by inoculation methods. In 1900 Van Gehuchten and Nélis announced their discovery of a diagnostic lesion occurring in the cells of the cerebrospinal axis. The sixth edition of the German work was issued in 1904 and contains a note on this rapid method of diagnosis by finding the protoplasm of the nerve cells invaded by new-formed cells, and also the observation of other investigators that this lesion occurred only in animals dying of the disease. Citing Bohl's finding of this lesion in cases of distemper, Friedberger and Fröhner conclude that "the histological diagnosis is, accordingly, not more reliable than the dissection." Later researches have demonstrated that although this lesion is not a specific diagnostic lesion, having been found in distemper and meningitis, it is, nevertheless, a constant lesion in cases of rabies that are permitted to die.

However, the just described rapid method of diagnosis has been superseded very largely by another based upon a discovery announced in 1903 by A. Négri and since fully confirmed by numerous investigators. This is the demonstration in certain nerve cells, particularly in the horn of Ammon, of peculiar, round or oval, non-granular, eosinophilic bodies, now known as Négri bodies. For nearly, if not quite, two years prior to the publication of this translation, rapid diagnosis by Négri bodies had become the routine practice in many laboratories. For this reason it would seem that such an important practice and the grounds for it should, of necessity, receive mention by the translator.

The physician or health officer relying upon this translation for his ready information as to reliable methods of rapid diagnosis of rabies would be sadly behind the times, to the possible danger of the patient or the severe condemnation of official action. When, as has happened in this case, a translation appears on the very eve of the publication of the next edition of the original work, the editor of the translation can hardly be excused for omitting the mention of certain important facts that he knows will assuredly be given a place in that new edition.

The same criticism must be passed upon the article on "Hog Cholera." In 1905, De Schweinitz, Dorset and McBryde, of the U. S. Department of Agriculture, announced their discovery of a filterable virus of hog cholera. The great benefit of this discovery lies in the ability thus secured to develop a successful serum treatment and prophylaxis. Previous to 1908, the date of this translation, there had been confirmation of this discovery in England, Austria, Germany, South Africa and France. In the annual report for 1905, of the Board of Agriculture and Fisheries, are given results of investigations carried on by Stockman, chief veterinary officer of Great Britain, and McFadyean, principal of the Royal Veterinary College, confirming this work of the Bureau of Animal Industry, and noting the finding of a filterable virus in the blood of pigs suffering from swine fever (English name for hog cholera) in the various parts of the United Kingdom.

On page 245, in describing the bacillus of hog cholera, "*entfärbt sich*" is unfortunately translated by "is stained by," instead of "is decolorized by" Gram's method.

"Veterinary Pathology" is a title accurately characteristic of the work. It is frequently remarked by veterinarians that pathology is the strong point of Friedberger and Fröhner. This characteristic, however, is never at the expense of other necessary features, as, for instance, etiology, symptoms, treatment. To anthrax are accorded forty-one pages, two of which are devoted to a thoroughgoing historical review of the disease. Comparative pathology is placed before the reader with great clearness and detail, and this makes the work of such inestimable value to others than veterinarians. The reviewer honestly believes that the critic's work is really exhausted in mentioning the few points to which attention is called above. When those have been dealt with there is left nothing but praise for the splendid work of Friedberger and Fröhner and the equally splendid Hayes' translation. Because of the great value of this book it is to be hoped that a new edition of the translation may be speedily forthcoming in which appear all the additions of the new seventh German edition.

Diseases of the Digestive Canal (Œsophagus, Stomach and Intestines). By DR. PAUL COHNHEIM. Second edition edited and translated by DAVID FULTON, M. D. (*Philadelphia and London: J. B. Lippincott Company, 1909.*)

We feel that this work should prove of really great value to the general practitioner and to the medical student. The lack of definite and specific knowledge of the diseases of the digestive apparatus is a most striking characteristic of many of the most active practicing physicians. Their stay in the medical school and hospital has taught them much about the diagnosis of pneumonia, typhoid fever, diseases of the cardiac, renal and respiratory apparatus and the exanthemata, while giving them a great admiration for the variations in human metabolism dependent upon abnormalities of the internal secretions, upon various parasites and upon variations from the normal of the cerebro-spinal apparatus. When the physician gets out into the world to practice his science and his art he is appalled by the infrequency with which he is called upon to treat myxœdema, exophthalmic goitre and Addison's disease, and even, comparatively speaking, typhoid fever and pneumonia, and with what persistency patients tell him of the ills of their stomachs and intestines, begging for light to lighten the darkness of these inaccessible regions. Cohnheim's book is peculiarly suited to the great mass of physicians to whom these unfortunate souls come for advice, groping in the darkness wherein diseases of the stomach and intestines have been immolated from time immemorial, wherein nervous dyspepsia has been the usual diagnosis and some placebo, in which, as a rule, an alkali and a bitter are eternally blended, the all-curing remedy. To such unfortunates this little book will furnish light, perhaps only a glimmer, if their previous condition of servitude has been appalling, perhaps rays possessed of real illuminating qualities. This is eminently a practical work. The literature is not reviewed; pathological details and theoretical discussions are eliminated, and everything is done to present the subject briefly, succintly, yet in a manner thoroughly comprehensible, to one who has not had especial training in this subject. It is practically an exposition of Cohnheim's own views on the diagnosis and treatment of gastro-intestinal diseases gained in his private and polyclinic experience, and written from the view-point of the general practitioner, for the author is not a stomach specialist, but a member of the humble former class. Cohnheim lays especial stress upon thorough and rational anamnesis; in fact, he feels that from this and the ordinary general physical examination a good working diagnosis can be made in a great majority of cases. We feel that this is going too far, and that it is most advisable to insist upon the chemical, physical and microscopical analysis of the test meal in the case of gastric diseases, and of the fæces in intestinal diseases, especially as these procedures are comparatively simply done, require little time, and unquestionably add considerably to the correctness of the diagnosis. Cohnheim very well insists upon the importance of a thorough examination of all the internal organs, and the central nervous system, and calls especial attention to a fact very often forgotten that many cases regarded as diseases of the gastro-intestinal apparatus are in reality due to disease elsewhere, and vice versa. The two main portions of the book, the one devoted to diseases of the stomach, the other to those of the intestines, are each subdivided into two main sections, a general section and a special section; under the former, Cohnheim considers the anamnesis with the different subjective symptoms, the methods of physical examination, particularly palpation and the chemical and microscopical methods of examination, while under the latter the organic or anatomic local diseases, the functional disorders, such as atony, neuroses, etc., and the symptomatic disorders secondary to diseases of other organs. These larger chapters are preceded by a short discussion of diseases of the œsophagus, and followed by brief outlines of balneotherapy, electrotherapy, diet, massage, mechanotherapy, etc., of use in gastro-intestinal diseases. A clinical A. B. C. of the most important disturbances of the digestive tract gives in six pages the salient signs and symptoms, and the appropriate treatment of these diseases. The book, although containing less than 400 small pages, gives such a satisfactory practical survey of the field, especially as regards diagnosis, without the use of elaborate methods and treatment along comparatively simple lines, that we feel we can thoroughly recommend Cohnheim's work to the general practitioner, in the firm belief that it will prove of the greatest service to him and to his patient in obtaining a better appreciation of these most common and yet poorly understood diseases.

T. R. B.

A Text-Book of General Bacteriology. By EDWIN O. JORDAN, Ph. D., Price, $3.00. (*Philadelphia: W. B. Saunders Company, 1908.*)

This text-book of Dr. Jordan's on bacteriology has already, even in the short space of time since it appearance, proved a valuable work for students and a reference book of great accuracy for advanced investigators in this subject. Written by one whose primary training was along the lines of general and hygienic bacteriology, rather than the purely medical side of the science, the book takes up the subject in a much broader way than do the majority of text-books written by medical men who look upon bacteria purely from the point of view of the harm they can do the human organism. Therefore, such matters as the bacteriology of air, soil, milk and water have received adequate treatment, while one entire chapter is devoted to "bacteria and the nitrogen cycle," and another to the bacterial diseases of plants. At the same time the purely pathogenic bacteria are well and accurately described—the description of their cultural characters and the means of differentiating closely allied species being especially good. Throughout the entire volume the references to literature are to be highly commended, a number of early investigations being cited, which are not mentioned in the average text-book. Considerable attention is paid the pathogenic trichomycetes and pathogenic protozoa, while the chapter on immunity is to be commended for its brevity and its presentation of facts, not theories. We have already had the opportunity of using the book in the class-room and most cordially recommend it to all students and investigators in this field.

W. W. FORD.

Infant Feeding. A Practical Guide to the Artificial Feeding of Infants. By J. S. FOWLER, M. D., F. R. C. P. (Oxford Medical Publications. *London: Henry Frowde and Hodder & Stoughton, 1909.*)

This little book consists of a recasting of a series of lectures delivered in connection with the Class of Diseases of Children in the University of Edinburgh and to members of the Edinburgh Post-Graduate Courses. It contains explicit directions for the feeding of infants and is a very readable book, containing as it does many of the personal views of the author. In the consideration of the composition and digestion of milk, especial stress is laid on the value of clean milk and methods to be used in obtaining it. Feeding of the normal infant is carefully considered and the various methods used by other authors briefly mentioned. The more important causes of failure are discussed and the feeding of some of the more important diseases considered. Many of the truths concerning infant feeding are very well put; for example the opening sentence: "The signs of successful artificial feeding are, first, a normal development, and, in particular, gain in weight; second, absence of digestive troubles; third, freedom from rickets and other nutritive disorders towards the end of the suckling period." Fowler does not believe in pasteurization, but prefers simply boiling or sterilizing in some form of sterilizer.

He is a great believer in sterile milk and deplores the prevailing opinion that raw milk is superior in any form to sterilized milk. In considering the subject of the caloric value of foods, he very wisely calls attention to the fact that a food may yield an abundance of calories, but may be unsuitable otherwise, and that it is not possible to get more information from a caloric standard than will answer the question: Is the infant being supplied with enough energy or fuel? It is also pleasing to note that the true value of intelligent care of the baby has been properly estimated, a point which has been much overlooked in recent publications on infant feeding. Taken as a whole the book should prove very useful to the student and very interesting to the expert. J. R.

BOOKS RECEIVED.

Constipation and Intestinal Obstruction (Obstipation). By Samuel Goodwin Gant, M. D., LL. D. With 250 original illustrations. 1909. 8vo. 559 pages. W. B. Saunders Company, Philadelphia and London.

Frühdiagnose und Tuberkulose-Immunität unter Berücksichtigung der neuesten Forschungen: Konjunktival- und Kutan-Reaktion, Opsonine, etc., speziell der Therapie und Prognose der Tuberkulose. Von A. Wolff-Eisner. Mit einen Vorwort von Geh. Med. Rat Prof. Dr. H. Senator und Geh. Med. Rat Prof. Dr. A. Wassermann. Zweite vermehrte Auflage. 1909. 4to. 378 pages. Curt Kabitzsch (A. Stuber's Verlag), Würzburg.

Censo de la República de Cuba. Bajo la Administración Provisional de los Estados Unidos 1907. Director, Victor H. Olmsted; Subdirector, Henry Gannett; Jefe de Inspección, José de J. Monteagudo. 1908. 8vo. 707 pages. Oficino del Censo de los Estados Unidos, Washington.

The Faith and Works of Christian Science. By the Writer of "Confessio Medici." 1909. 12mo. 232 pages. The Macmillan Company, New York.

A Text-Book of Special Pathology. By J. Martin Beattie, M. A. (N. Z.), M. D. (Edin.) and W. E. Carnegie Dickson, M. D., B. Sc., F. R. C. P. (Edin). With 191 illustrations and 2 colored plates from original preparations. 1909. 8vo. 599 pages. P. Blakiston's Son & Co., Philadelphia.

City of New York. Department of Public Charities. Annual report for the year ending December 31, 1907. 4to. 649 pages. Martin B. Brown Press, New York.

Transactions of the American Electro-Therapeutic Association. Seventeenth annual meeting held at Boston, Mass., September 17-19, 1907. 8vo. 164 pages. 1908. A. L. Chatterton & Co., New York.

Elementary Practical Treatise on Diseases of the Pharynx and Larynx. By Dr. E. J. Moure. Translated and adapted by J. Malcolm Farquharson, M. B., F. R. C. P. (Edin). With 210 illustrations. 1909. 8vo. 403 pages. Rebman Company, New York.

A Manual of Practical X-Ray Work. By David Arthur, M. D., D. P. H. and John Muir, B. Sc., M. B., Ch. B. and B. Sc. (Pub. Health). With about 120 illustrations. 1909. 8vo. 244 pages. Rebman Company, New York.

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